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*Published Monthly at Indianapolis, Indiana*
Vol. III, No. 10 AUGUST, 1927 $1.00 a Year

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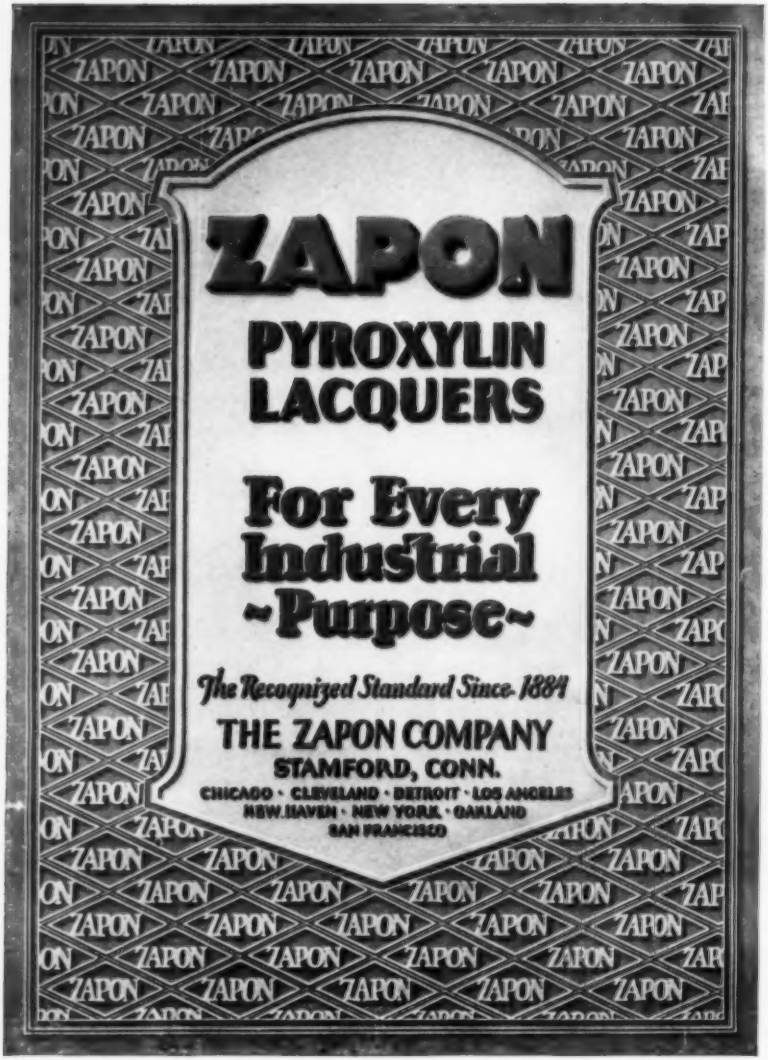
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# *Industrial Finishing*

*An Independent Publication Devoted To The Finishing of Industrial Products*

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# With the Editor

THE FINISH materials manufacturer, equipment manufacturer, chemist, research laboratory, salesman, demonstrator, foreman finisher and finishing room—all occupy a vital place of responsibility in industry today. They are sought by individuals, firms, associations and entire industries that have problems of production, decorative design, color harmony and surface durability.

A case to point is found in the recent action taken by a hardwood flooring manufacturer's association. Concerns in this group found the demand for their product diminishing. Serious inroads had been made by other types of floor covering. Attractive color schemes and certain other merits, supplemented by the power of advertising, had placed competitive materials in a commanding position.

The problem was put up to a finish manufacturer who immediately went to work on it with the customary energy characteristic of the industry. Research work in the laboratory followed and as a result, new stains and decorative finishes were developed. The new finishes give to the hardwood flooring, new attraction, new interest, and new life. An extensive advertising campaign is planned, of course, to bring this product, with its new sales appeal, to the attention of architects, builders and the public.

What has been done for these flooring people, has been done and is being done for many other firms and industries. Never has the value of the finish manufacturer's laboratory and the co-operation of his staff with finish users been demonstrated so often and so forcibly as in the past few years. New finishes and improved methods have been developed to replace the old. Materials totally void of decorative value have come into great favor and extensive use solely through the attractive and enduring finishes used on their surfaces.

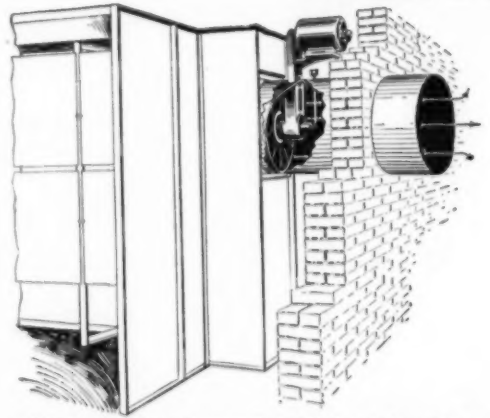
In the light of these facts, it is important that every individual and firm in the industry keep abreast of the rapid progress being made in finishing and thereby be prepared to take advantage of opportunities that are continually arising. The use of INDUSTRIAL FINISHING is the logical means to this end.

W. H. Rohr

Managing Editor

# What it means to you

## to use DeVilbiss spray-finishing equipment



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**Spray-finishing System**

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# What Causes Lacquer to Blush —and How to Prevent it

***Lacquer expert explains what blushing is, why it manifests itself chiefly in summer months and how to prevent it through the proper use of suitable materials***

**By J. C. Alsee**

SINCE the arrival of the hot summer months, the matter of "blushing" has been one of vital importance to users of lacquers. During the months of June, July and August the atmosphere is invariably "heavy" with humidity. The atmosphere has a normal average humidity of 65 percent, but often in summer time the humidity hovers close to 100 percent.

Blushing is that whitish, cloudy-like appearance which sometimes shows up on a lacquer film. This appearance renders a film lifeless. This so-called blushing is due to excessive moisture being condensed from the heavy atmosphere and depositing itself upon the lacquer surface or film. This deposit takes place directly after the surface has been sprayed and while the film is in the course of drying.

The surface upon which the lacquer is being applied is cooled by the heavy atmosphere in the immediate vicinity. This cooled surface then acts as a magnet, which draws the heavy atmosphere to itself and when deposited upon a wet surface, incorporates itself with the lacquer; since water and lacquer will not mix, the water causes a disruption which results in the precipitation or dropping out of the nitro-cellulose content. Steam or vapor in the immediate vicinity of a finishing room can also cause this condition.

### A Summer Complaint

Blushing will invariably occur on humid days when a cheap lacquer is being used. These cheap lacquers, from their composition, are made of low boiling solvents and extenders or diluents, and are therefore of a quick-drying nature. This quick-drying feature of the lacquer hastens the attraction of the humidity to the cooler surface and thereby causes a precipitation of the nitro-cellulose content.

During this period the wood grain invariably raises to an uneven surface, thus bringing about more difficulty later in the sanding and rubbing. The drying of the stain and filler is also retarded. When an oil stain is used, the stain may bleed through, causing a muddy appearance.

To overcome this humid condition, great care should be exercised to eliminate moist air from the finishing room. Windows should be tightly closed and the ventilation of the finishing room should be maintained by fans. Care should be taken in maintaining a reasonable distance between the finishing booths and the fans. An air scrubber should be attached to the main air line to render the line free of water.

When the weather conditions are very humid, the entire finish-

ing room should be heated. Some lacquer users spray thinner directly over the film when the film shows a tendency toward blushing; others incorporate a portion of clear lacquer with the thinner. This clears the film and while the film is in the course of drying, the sprayed object is placed in a drying oven.

**Using Lacquer "Retarder"**

A retarder is sometimes used but certain manufacturers of lacquers are opposed to its use. Such manufacturers maintain that a lacquer should be so compounded as to withstand this condition. However, in some sections of the country the humidity is greater than in others; it is therefore hard to produce or adapt a lacquer to meet all conditions.

The retarders are compounded with the higher-boiling, active, nitro-cellulose solvents and diluents, so that the addition of a portion of retarder with the regular recommended thinner should retard the drying of the lacquer sufficiently to overcome the tendency toward blushing. There are some cases where the retarder alone is used as a thinning medium to attain the desired results.

## Walnut Stain for Other Woods

The reply to the question of walnut stain for woods other than walnut, in the June issue, by W. J. Kitely should have included nitro-cellulose shading or high-light colors. These are comparatively cheap. They speed up production, will not fade and, to a great extent, they eliminate the use of oil or water stain.

These lacquer shading colors are made by using a combination of pigmented lacquers, for example, 80 percent of black pigmented lacquer and 20 percent of a suitable red pigmented lacquer. The undertone of this mixture has a rich walnut tone and when reduced with lacquer thinner, ready for the spray, the resultant liquid should contain about six percent of nitro-cellulose.

To produce a French walnut or a Huguenot walnut, first fill the wood with the proper filler. After filler is dry, follow with a very light coat of lacquer shading colors and a beautiful high-lighted effect results.

Where a walnut effect is wanted on other than walnut wood, a light coating of clear lacquer or orange shellac is necessary as a first coater followed by the lacquer shading color; then spray around the border of the panel or where the darker shade is desired.

A dark walnut may be produced by first coating lightly the entire panel, then following with a second coating around the border of the panel. There are many beautiful combinations which may be made from the above material.—Chas. T. Chapman.

### *Air Compressor Bulletin*

Brandon Air Compressor Co., of Indianapolis, has just issued an illustrated bulletin which describes the company's directly-motored compressor and tank outfits, which are suitable for supplying air for spray painting and finishing.

### *New Meter Bulletin*

Worthington Pump & Machinery Corporation, of New York City, manufacturer of air compressors, has published a 14-page illustrated booklet entitled "A Trip Through the Worthington Meter Factory" at Harrison, N. J. The illustrations show every operation from start to finish.

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An important operation in connection with finishing—sanding.

# Improvements Prompted by Complaints About Finish—II

***How buyers' complaints—which are more frequent during dull periods—led to an investigation that resulted in far-reaching improvements in establishing and maintaining higher grade standards***

By E. F. Werner

UNDER THE circumstances it was deemed best to call in the representative of the company from which the sandpaper was purchased and make a complete check on the correct grade of paper to be used at each step in the regular manufacturing process.

The production operations are as follows: In the cabinet room, all flat work is put through the triple-drum sander, which is papered with Nos. 1½, 1 and 0 garnet paper. It is then belt sanded with No. 0, being finally belted with No. 2/0. The work then goes to the assembly bench, with strict orders that no hand sanding is to be done without permission of the foreman.

In their zeal to turn out better merchandise the men on the assembly bench would often sand unnecessarily, causing unevenness on the surface. Often they cross-sanded and thereby made scratches, which would not show up until stain had been applied in the finishing room.

**Details of Sanding Operations**

Heat, generated by the friction of sanding, often packs quantities of the very finest dust in the pores of the wood. Unless this dust is cleaned out, the pores will not hold the filler and stain prop-

# LACQUER

## GLOSSY—FLAT

*Our glossy body lacquer can be polished to produce a very high lustre. It will not chip or check—sprays freely.*

*For a dull-rubbed effect our flat lacquer produces an excellent finish at low cost . . . where competition is keen this particular material will be found extremely advantageous.*

*These lacquers are not an experiment—they have been tried and tested and are being used very successfully by hundreds of furniture manufacturers. We spent years developing them, and were firmly convinced that they would accomplish all that would be expected of them before we offered them to the trade. Liberal samples on request.*

**Indianapolis Varnish Co.**

131-147 NORTH PINE ST.

**Indianapolis, Indiana.**

erly; most of it will be wiped out.

By the new procedure an inspector examines the stock as soon as it reaches the finishing room, and any part not up to standard is immediately returned to the cabinet room. Every piece is cleaned with a good stiff bristled brush and then blown off carefully with a jet of air under high pressure.

After the first coat of lacquer the stock is placed in charge of the leader on the sander bench. This leader has been carefully instructed as to the degree of sanding required on the various jobs. Only two grades of paper are available at this bench—No. 3/0 for the first or rougher sanding, followed by No. 5/0 for final sanding. Every individual on the sanding bench has been carefully instructed how to use the paper.

Paper that comes in sheets, approximately 8x10-inch., is cut so as to give four pieces about 4x5-in. This paper, which is regular garnet, is moistened on the back and held in the operator's hand. No blocks are used at this step in manufacturing, it being our belief that by using a block the unevenness of a surface cannot be gone over as carefully, and as a result the workman either doesn't hit the rough spots hard enough or else he cuts through the other places.

Sanding by hand gives a more "personal touch" to the work. It is absolutely contrary to instructions to sand in any direction except with the grain of the wood—with the exception of turned pieces. Special instructions are given regarding the sanding of edges, in order not to break through the lacquer and stain and thereby revealing white edges.

**Sander's Signature—Inspection**

Unless the job is an extremely large one or the work is to be shipped at a very early date, only one sander is placed on a job. This permits a strict accounting if any stock is rejected on account of poor sanding. When the job is finished the sander (or sanders if more than one), places his signature on the work ticket.

This signing of the name has, to our way of thinking, done more to raise the standard of work than any other one thing. The degree of responsibility going with the signing of one's name has aroused the interest and cooperation of the workers.

Stock leaving the finishing department is given its final inspection before being placed in the stock department. This inspector has been carefully instructed as to the approximate standard the work should come up to, and he has full power to return any or all work to the finishing room.

**Checking Up Results**

As a check on the work being turned out by the new method, the same three men who were asked to examine the various lots during our previous tests (as mentioned in last month's article) were asked to test another lot of 100 tops going through at this time. The results are as follows:

| | No. 1 | No. 2 | No. 3 |
|---|---|---|---|
| Lot of 100 | | | |
| Absolutely first class | 91 | 90 | 93 |
| Passable | 6 | 8 | 5 |
| Reject cabinet | 0 | 0 | 0 |
| Reject finish | 3 | 2 | 2 |
| | 100 | 100 | 100 |

Comparing the three experiments it would appear at first as if by almost trivial means, the quality of the work had gone up

!

# A most unique and distinctive finish!

*Pioneered as a leatherette finish for radio horns, its variety of attractive combinations has brought it into use for many other articles, such as radio cabinets, furniture, fixtures, novelties, toys, etc. Ease of application—uniformity of pattern—combinations to suit your particular requirements, are outstanding qualities of BREVOKRAK.*

*Thorough-going demonstration made at your plant if desired.*

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*"Values That Endure"*

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CAPSER LABORATORIES
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from mediocre or average grade to almost perfection, but the true facts do not show that great improvement. At present, the output is less than under the former schedule, but as business conditions are not rushing it will enable us to build up this factor before the next busy season. Another thing additional in the cost, is the additional inspector between the cabinet room and the finishing department.

This inspector is responsible for no work showing up in the final inspection as being rejected on account of cabinet work, because it is sent back as soon as it reaches the finishing department. Another factor in favor of the inspector at this point is the elimination of shortages due to failure of small items to be sent up from the cabinet room, and not being discovered until the final inspection. This would, under the old method, cause a delay of some time.

### Established Standards

Summarizing the whole situation, leads us to believe that it all depends upon three things:

First—know the standards you are aiming for.

Second—explain these standards to the workers and instruct them properly, so they can attain the standard set.

Third—see that proper supervision is maintained at all times, so that the standards will be maintained.

Another point to be remembered and one which will help considerably is, do not be afraid to call in the people from whom you obtain your source of supplies. They get around and can often help one out of serious trouble.

## The Industrial Service Man

Industrial finishing departments have their problems to solve from day to day and in this the manufacturer of industrial finishes and his salesmen play a major part; but last and not least is the industrial service man.

The service man is always at the mercy of the finisher; he is always willing to co-operate to the best advantage, but it is not the idea some finishers have of co-operation, that is, as I have often heard remarked a bit sarcastically, "You are going to send us one of those fellows to tell us how to do our work."

The service man is sent to show the finisher how to finish his company's products the best possible way at the least expense. Often he takes note of all of the finisher's troubles, returns to the finish manufacturer, submits a detailed report and then gets busy in his own finishing room or experimental department and works out the problems, testing out the various materials best adapted for the purpose. This costs the manufacturer of finishes lots of time and money.

The service man then returns to the industrial plant and shows what progress he has made. The foreman finisher gets the better of the deal. He can go right ahead with his work, smoothly and economically, with the sound backing of the finish manufacturer, salesman and service man. By all means, finishers, respect the service man; he is there to help and not to dictate.—Joseph Cowan.

---

With modern spray guns it is possible to secure anything from a round, conical spray, to a broad, fish-tail spray.

# When

you are up against a production job that seems impossible of accomplishment—when a lacquer that does a thorough job at a reasonable cost seems impossible to obtain—then it is time to try Rockford Varnish Company lacquers. Many manufacturers have tried them under just such conditions—and they have made good. We are not going to try to tell you their merits in words—all we ask is a chance to prove that money can't buy a more satisfactory lacquer. Send in a trial order today.

*"No Tampering with Quality"*

*The*

ROCKFORD VARNISH

*Company*

ROCKFORD, ILL.

# Finishing Government Airplanes

*Instructor of Painting at Hampton Institute, Hampton, Va., reveals some interesting facts about the materials, methods and colors employed in finishing modern airplanes*

By A. F. Eibell

A RECENT visit to one of Uncle Sam's air ports brought forth some interesting information regarding the painting of the airplane, both as to manner of execution and materials used. At one plant it developed that the material they call "dope" is really a nitro-cellulose brushing lacquer manufactured by a well known firm.

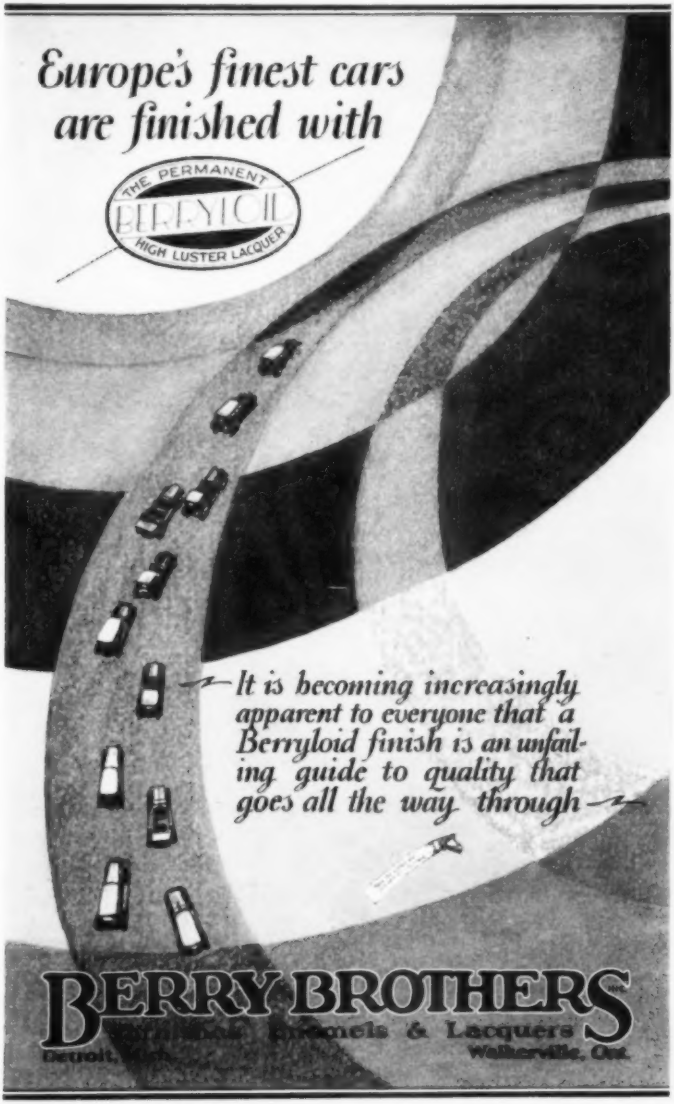
After wood and steel frames have been primed and the linen covering stretched, one process is to apply three coats of clear dope. This is followed by two coats of a mixture composed of a fair grade of aluminum bronze powder and the clear brushing lacquer or dope, in the proportion of 1-lb. of bronze to the gallon of dope; after this two coats of a widely-advertised varnish are applied.

From one to three hours are allowed between coats of dope for drying, while 36 hours are allowed between coats of varnish. It is claimed for this method of finishing that a "ship" will last three years without varnishing.

The lettering, emblems, etc., are either done with a stencil with dope colors, or with brush and Japan colors—between coats of varnish.

### A Natural Color Scheme

There is still another way in use here which, to my mind, makes a far more artistic effect than the aluminum bronze job. It consists of finishing the wings in clear dope, as all planes are covered with linen, and edges, seams, etc., are bound off with cotton. Three or four coats of dope have the effect of turning the linen a medium tan color while the cotton remains a cream color in contrast. When two coats of the light-colored varnish are applied this combination in contrast to an O. D. or dark gray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BERRY BROTHERS
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Walkerville, Ont.

body, produces an excellent effect. All of the foregoing applies to treatment of wings.

The body, or fuselage, is composed of but little wood, being mostly metal framing and linen covered. All metal, etc., is first primed, after which two or three coats of clear dope are applied, followed by pigmented lacquer of desired color.

It appears that up to quite recently bodies were finished in oil enamels but it is claimed in favor of the lacquer finish that, in addition to its working faster, the color used to coat the body can be used as a cement to attach a patch when there is patching to be done. If enamel were used as formerly, it would have to be removed for several inches around the hole so the dope could take hold.

In another branch of the service it is claimed that their dope does not contain any nitrated cotton, but is a cellulose acetate, and for best results it should be applied at a temperature of 90-deg., with 20 minutes between coats; seven coats are necessary to produce complete finish. This material costs $1.30 per gallon in drums at present, but was sold for $9.00 per gallon during war time; the thinner now costs $6.00 per gallon.

In this plant, it is claimed that a 90-deg. temperature is necessary to insure proper drying and to keep down "blooming," while at the first plant visited, blooming was unknown and they worked dope at any old temperature and under any conditions, always finishing of course with varnish. In the second plant, the body and wings are done in colors the last two coats, these colors being of a different manufacture than the clear dope.

**Chance for Spray System**

When the question of using the spray system was put to the first plant, claim was made that it could not be used successfully with the bronze mixture. At the other plant it was admitted they should have a spray for best results, but so far they had been unable to get one. It looks as though here is an opening for some of those high-power salesmen to get to work.

Out of all this, certain specific facts seem to be outstanding: First, they are not "plastering" on 12 to 20 coats of dope and enamels, but are getting excellent results from seven coats; second, our new friend "lacquer", whether for brushing or spraying, is doing the work; and third, where brushing lacquer is used it is best to use clear varnish for the final coats, while with spraying lacquer, even though it is applied with a brush, varnish is not necessary.

These various dopes have such a "pull" that the shrinkage is as great as 3-in. to a square yard, consequently if too many coats are applied, there is not only added weight, but there is danger of pulling the wings out of shape. Like any other branch of finishing, the least number of coats that will produce a surface which will withstand the use it is put to, the better the final results.

---

Finishers may come and finishers may go, but certain finishes go on forever.

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***New Booklet on Staining***

Dakalite Products Co., Inc., Minot, N. D., have published an interesting little 22-page booklet entitled "The Modern Method of Staining Wood," in which is featured the use of Dakalite in connection with modern wood finishing. Copies are free on request.

# NIKOLAS LACQUERS

IF you are not satisfied with your Lacquer try our quality products. For 35 years the World's Standard. Our Lacquers cost less per unit finished.

## G. J. Nikolas & Co., Inc.

1227-35 Van Buren Street
CHICAGO, ILL.

*Branches:*

33-35 Grand St., Brooklyn
1150 Venice Blvd., Los Angeles
73 Main St., San Francisco

## Solving a Problem of Air Circulation

In a new one-story furniture factory of the latest type construction, the floor plan of the building is the shape of a letter U, and the finishing room is the connecting bar or link between the wood-working production wing and the storage, packing, crating and shipping departments. The entire plant is heated with unit heaters of the type illustrated in Fig. 1.

Referring to Fig. 2, which shows a floor plan of the 60x180-ft. finishing room, the arrows show the general route taken by furniture in the natural sequence of operations. Everything put through this department is finished in lacquer, hence no varnish drying room or kiln is provided.

Natural light and ventilation are provided by windows around the outside walls and by two 8x20-ft. monitors in the roof. In the matter of ventilation, another factor of considerable consequence also enters into consideration; it is the exhaust units at each of the spray booths marked *A*, *B* and *C*, Fig. 2. The exhaust pipes from these booths project straight up through the roof.

The location of the single large unit heater like Fig. 1, is marked *H* in Fig. 2. This heater, of course, recirculates the air within the room; that is, the fan draws air through a lower compartment, passes it through coils which during winter are heated, and exhausts it from the face side near the top.

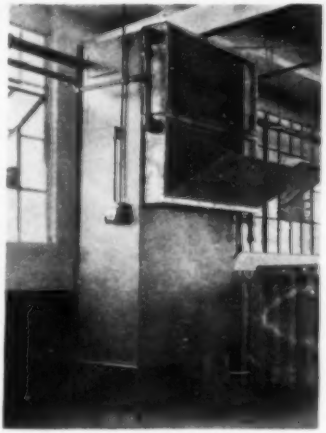


Fig. 1—One of the large size unit heaters —as placed at *H* in Fig. 2.

After the new plant has gotten into operation, the circulation of air proved to be inadequate, especially in the area to the right of spray booths *B* and *C*, Fig. 2.

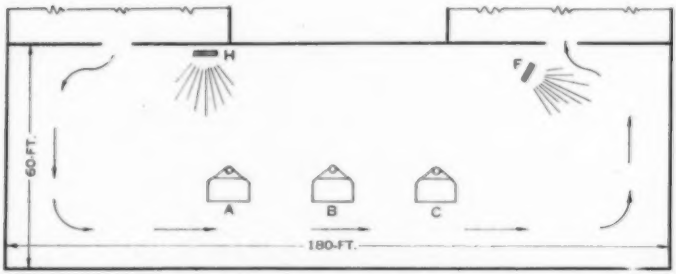



Fig. 2—Floor plan of finishing room in new U-shaped factory building.

# What More Can You Expect of a Lacquer?

**Pe-Co-Lac Pyroxylin Lacquer** produces a finish that is as hard as a rock and unusually durable. It dries quickly; takes a high polish and holds it.....Non-blushing—non-peeling—non-pinholing.

**Pe-Co-Lac** can be supplied in the clear or a complete range of beautiful colors.

## PECORA PAINT COMPANY

3rd & Sedgley Streets

Established 1862 by Smith Bowen

Philadelphia, Pa.

Incorporated 1911

Accordingly, a smaller combination heater-ventilater unit was mounted overhead as shown in Fig. 3, at location marked *F*, Fig. 2. This fan is kept in operation throughout the day and it has remedied the former condition of inadequate circulation.

During summer weather the steam heat is turned off and the fan is operated simply as a ventilating fan. This case is simply cited to show what remarkable results can be accomplished, even in large rooms, by the installation of a small directly-motored fan unit such as that illustrated in operation in Fig. 3.—F. W. Worthington.

Fig. 3—A small combination heater-ventilator unit (as placed at *F* in Fig. 2) used chiefly to promote circulation of air over newly finished furniture.

## Must be Dry Before Shipment

Regardless of whether the finish on articles is air-dried or baked, it must be thoroughly dry and hard before the goods are packed for shipment. Recently a customer of mine, who is finishing metal filing cabinets in an olive-green baked-enamel finish, informed me that the baking enamel dried too slowly. On inquiring how soon the cabinets were packed after leaving the oven, I learned that only a few minutes were allowed; I also found out that furniture polish was used to take out all hand marks.

Here was the trouble: First, the finish was still soft when the goods were packed; a few hours should be allowed for the surface to dry and harden right through. Second, furniture polish was used, making conditions still worse. Goods must be well dried and hard before being packed.—J. Cowan.

## Musical Instruments in Lacquer

The following finishing schedule is being used with great success for finishing the maple wood parts of certain musical instruments:

1—Fill with light wood paste filler.
2—Lightly sandpaper.
3—Spray alcohol shading stain, with a little shellac in the stain for a binder.
4—Spray first coat of clear lacquer.
5—Spray second coat of clear lacquer.
6—Spray third coat of clear lacquer; let dry 12 hours.
7—Rub down with hair cloth.
8—Rub down with fine pumice powder and felt.
9—Buff and polish.—C. J.

There are finishing materials made particularly for brushing, spraying and dipping, therefore select and use them accordingly.

### *Kellogg's Manager in Kansas City Territory*

The Kellogg Mfg. Co., manufacturer of air compressors, announces that Mr. H. O. Holland is now Manager of the Kansas City, Mo., territory for the Kellogg Mfg. Co.

# SUNSTAND

## A WATER STAIN IN A NEW FORM

Sunstand Stain is an unusual development, being the result of intensive study on the application of dyes to vegetable fiber (wood).

A group of dyes made especially for wood fiber, have been, through our patented process, made available in a non-grain raising solution.

Sunstand Stain possesses unusual fastness to light and resistance to bleeding in commercial lacquers.

## MARIETTA PAINT & COLOR CO.

**Marietta, Ohio** **High Point, N. C.**

(Fill out and attach to your letterhead)

We are using water—oil stain. (Check)
We are interested in SUNSTAND STAIN. Please send sample.
Name.....
Address.....

I.F.—August

# Lacquers to Suit Your Needs—II

*President of Pyroxylin Products, Inc., explains practical facts about the composition of lacquers, and points out the importance of selecting lacquer to suit one's own particular requirements*

By W. Courtney Wilson

NOTE: While the following applies directly to clear lacquers, it applies in practically the same degree to pigmented lacquer enamels. The percentages given are exclusive of pigment.

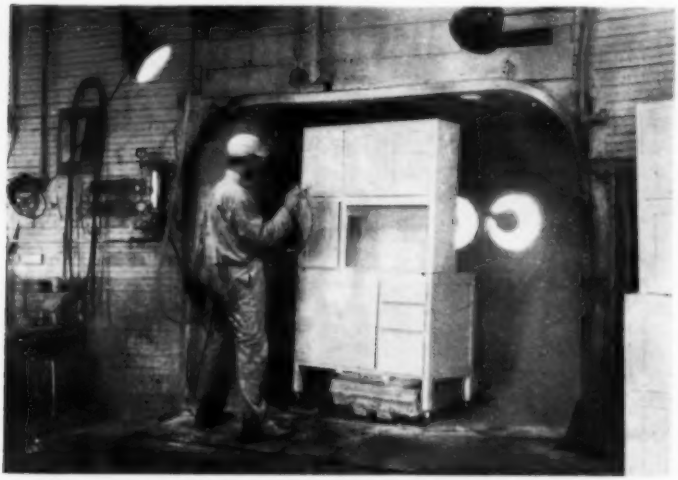
### Which Lacquer Is Best?

The three factors that the lacquer buyer must decide upon are: 1—Durability. 2—Appearance. 3—Cost.

Of these, the most important, so far as the selection of a lacquer is concerned, is durability. By durability is meant not only the length of life of the lacquer or enamel, but also its resistance to wear and scratching. If durability or the long life of a lacquer is of prime importance, a lacquer that will give a tough, horny like finish should be used. Such a lacquer will naturally be harder to rub or polish, due to its very nature.

If, on the other hand, a finish is desired that will give a heavy body in few coats and that will rub or polish easily, then some of the durability must be sacrificed, since such lacquers must be less resistant to abrasion and wear.

The lacquer purchaser can then



The lacquer used must be suited in every way to the character of the work.

*Especially*
*—for Furniture Manufacturers*

# Nitroid Clear Lacquer

A colorless Lacquer—prepared especially for furniture manufacturers. NITROID gives *quality* results at *lowest* cost. It is clear and transparent. Can be polished and when finished looks like a coat of celluloid. It dries very quickly, is positively check-proof under all climatic conditions and rubs as easily as any rubbing varnish.

NITROID enjoys extra long life and is not loaded with gum, which usually tends to make a brittle lacquer.

# Nitroid Flat-Lacquer

With NITROID (Flat) the finishing room can produce a rubbed job without the expense and labor of rubbing. NITROID is a real money-saver.

It is clear and transparent, dries quickly, is checkproof and enjoys extra long life.

*Special Offer*

**Order a trial drum of NITROID Clear or Flat or both. These two lacquers give most for your money. Let them prove it. Write today for trial drum. Use 5 gallons of it, and if you are not more than satisfied with the result return the drum at our expense.**

*Address* L. E. SHARPE
612 Division St., La Porte, Ind.
*Middle Western Representative*

**Boston Varnish Company**
**871 Everett Station** **Boston, Mass.**

decide between a lacquer having a non-volatile composition containing in the neighborhood of 50 percent pyroxylin and 50 percent plasticiser and resin, and a lacquer having from 32 to 40 percent pyroxylin and from 60 to 68 percent resin and plasticiser.

If the non-volatile constituents of the lacquer contains from 48 to 58 percent nitrocellulose, and the proper ratio of plasticiser and gum or resin, the finish produced will be tough and horny, and quite flexible. Such a finish will resist wear and remain unchanged over very long periods of time. On the other hand, it is more likely to orange peel, and will, due to its toughness, be more difficult to work after it is dry.

Since, as has already been stated, not much more than 10 percent of the total lacquer can be nitrocellulose when thin enough to spray, it is obvious that such lacquers cannot contain much over 20 per cent non-volatile at spraying viscosity. It is usually necessary, therefore, to use a greater number of coats in order to obtain the "body" desired.

For high-grade work, where it is desired that the finished article maintain its appearance over long periods of time, the lacquer selected should not have much less than 50 percent pyroxylin in the non-volatile constituents.

### A Lacquer Near Varnish

As the pyroxylin or nitrocellulose content is decreased, the lacquer approaches closer and closer to the spirit varnishes. For instance, if the non-volatile constituents of a lacquer contained only 10 or 15 percent of pyroxylin, the lacquer would have little advantage over a straight spirit varnish. While there may be some dispute as to the exact point in the ratio of pyroxylin to gum and plasticiser where the spirit varnish characteristics are overcome by pyroxylin, it is pretty generally agreed by those who have carried out careful tests, that the minimum is between 30 and 35 percent pyroxylin.

The lacquer user should insist, therefore, that from 30 to 35 percent of the non-volatile portion of the lacquer should be pyroxylin. If the finish contains less than this amount, it should be considered as a fortified spirit varnish rather than as a pyroxylin lacquer.

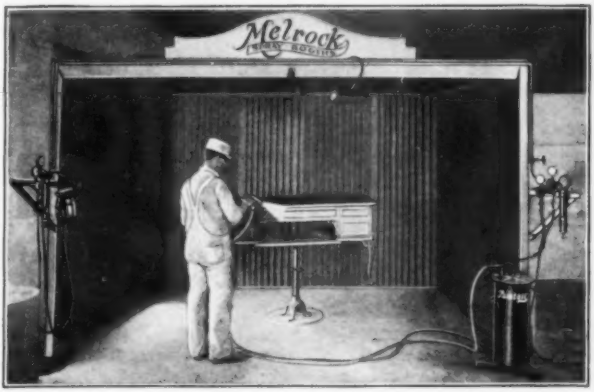
A lacquer, whose non-volatile portion contains, say 33 percent of pyroxylin, will give a heavy bodied finish that will be comparatively easy to rub to a polish. In glossy finishes the gloss is also likely to be somewhat higher than in a lacquer containing a non-volatile composition having 50 percent pyroxylin. Where long endurance is not a prime factor, and where a full-bodied varnish-like finish is desired at minimum cost, a lacquer of this type should be selected.

In general, therefore, the lacquer buyer should know:

1—The percentage of non-volatile constituents, exclusive of pigment, that is contained in the lacquer. In most good lacquers, this seldom runs below from 18 to 20 percent.

2—The percentage of pyroxylin in the non-volatile constituents.

He will then have a basis for deciding as to whether the lacquer will meet his requirements as to durability or type of finish.




# Melrock SPRAY BOOTHS Pneu-Gun ATOMIZATION

The finish put on with the Pneu-Gun and Melrock Spray Booth amazes everybody by its wonderful clearness and mirror-like smoothness and uniformity. There are no waves or variations in tone because of the more complete or perfect atomization of the spraying materials. The finish looks as if it had been put on in one solid piece.

Products that only a few months ago were thought to require hand brushing and unlimited amount of hand rubbing are now receiving a deeper, more lustrous and more permanent finish with the Pneu-Gun—and the cost of finishing has been tremendously reduced. The new and exclusive atomization system of the Pneu-Gun in many cases will eliminate rubbing. The most beautiful blending and shading are done with this gun. Pneu-Gun Atomization has no packing or washers to interfere with flow of material or to cause color bleeding. Width of finishing stroke instantly regulated by light touch on trigger.

The Melrock Spray Booth lowers insurance rates and absolutely protects operator's health by keeping from him all fumes, gases and back drafts. Arrangement of baffle plates forces uniform suction across entire face of booth. No dead air pockets. Dust free spraying.

The MELLISH-HAYWARD Co.
Manufacturers Established 1894
211 W. AUSTIN AVE. CHICAGO, ILLINOIS

He should also insist that the pyroxylin used should be new material and not scrap celluloid or powder dope, if he expects his finish to last for a period longer than one year.

### An Optical Illusion

An interesting optical illusion is obtained in the case of nearly all dull lacquers, namely, that a dull finish will *appear* to have more "body" than a clear finish. That is, where there is a coat of dull or "flat" lacquer and a coat of glossy lacquer of exactly the same thickness, as measured on a micrometer, the dull or flat coat will appear thicker. This fact should be taken into consideration in changing from a gloss to a flat finish, and if the gloss lacquer does not appear to produce a finish of the same "body" as the flat lacquer, the film thickness should be checked.

Lacquer enamels are clear lacquers in which pigments have been ground. It is usually necessary that the lacquer enamel have a higher viscosity than a clear lacquer in order to prevent the pigment from settling out excessively. This necessitates the use of thinner at the time of spraying.

Since thinners are completely volatile, the thinner added is completely lost during drying. The addition of thinners, therefore, is equivalent to decreasing the proportion of non-volatile constituents in the lacquer. In other words, the amount of actual finishing material is not increased, it is simply diluted. The use of excessive amounts of thinner is therefore uneconomical, except where it is desired to apply a very thin coat of finish.

### To Get the Gloss

There has grown up a demand for lacquer enamels which dry to a finish having a high gloss. In general, there are three ways of increasing the gloss of an enamel:

1—A very careful balance of solvents and diluents in the non-volatile.

2—Increasing the amount of resin at the expense of the pyroxylin.

3—Decreasing the amount of pigment.

The method of increasing the gloss by a careful balance of solvents and diluents is too technical to be discussed in an article of this nature. It should be borne in mind, however, that the additional gloss that can be obtained by this method is very limited, so that in general the amount of gloss is influenced rather than regulated by the solvents and diluents.

The gloss of an enamel can be greatly increased by increasing the proportion of resin in the non-volatile constituents of the lacquer. This is because lacquers that are very high in resins or gums approach spirit varnishes.

The same properties, therefore, hold for enamels as hold for clear lacquers of high resin content, and it should be kept in mind that insistence upon exceptionally high gloss in enamels may mean the sacrifice of a considerable amount of durability in the finish. Where durability is at all important, it is usually better to obtain the high gloss by polishing rather than to insist upon a finish that dries with a very high gloss.

The third method of increasing the gloss is at the sacrifice

Invite us to show you

# Sun Flat Lacquer

We will display our goods at our expense, and give you practical advice. How best to use.

## White No. 1 Lacquer

**COLORLESS**

Clear and transparent, looks like a coat of celluloid on work. Can be polished.

**FINISHING ROOM FAVORITES**

## No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competition.

## SUN VARNISH CO.

**Louisville, Ky.**

of hiding power, where a given pigment is used. Lacquer manufacturers are generally using the highest grade of pigment obtainable in order to secure the maximum hiding power with the minimum of pigment.

Pigment manufacturers have developed a number of very high-grade pigments that are well adapted for use in lacquer enamels, but it is only when a new pigment is developed by the pigment manufacturer that it is possible to decrease the pigment and maintain the original hiding power.

The lacquer enamel user who insists on exceptionally high gloss, usually selects an enamel of high resin content. He should remember, however, that unless he knows the amount of non-volatile in the clear lacquer vehicle, and the percent of pyroxylin in the non-volatile, he may be using an enamel that has a shorter life than he has been led to expect of a lacquer finish. This shorter life is neither the fault of lacquers in general, nor of the lacquer manufacturer, but to the user's failure to properly balance immediate and future appearance.—Paint, Oil & Chemical Review.

## Automobile Spray-Booth Exhaust System

A view of some of the outside exhaust piping from spray booths in a new automobile body plant in Detroit, Mich., appears in Fig. 1. These tapered stacks or flues are of a type which is known as the Evase syphon stack.

The cross-sectional diagram in Fig. 2 shows the arrangement and operation of a typical syphon-stack spray-booth installation. This makes a compact unit and is designed to occupy the minimum floor space and to adapt itself to easy conveyance of automobile bodies to and from the booths by slow-moving conveyors.

Referring to Fig. 2, beyond booths *A* and *B* are other booths in direct line. In an installation of this sort the next pair of

Fig. 1—Group of stacks which remove fumes and waste spray from booths in a large automobile body factory.

booths would be open for intake and equipped with exhaust openings placed in exact reverse of these openings in booths *A* and *B*.

In the particular installation shown here for automobile finishing, the worker in a booth covers only one side of the body. The other side is sprayed by the workman in the next booth which is open on the opposite side. Thus the fumes from the spray guns operated in booths *A* and *B* can-

# *Draw on Glidden Experience*

—— and get the answer to your finishing problems.

With over fifty years' experience in the finishing of every product that needs finishing, Glidden men can bring you the most practical assistance.

They will make a thorough study of your finishing needs and offer suggestions for the finishing schedules and the finishing materials that will give you the best and most economical results.

*Draw on Glidden Experience.*

GLIDDEN INDUSTRIAL Lacq

THE GLIDDEN COMPANIES · *National Headquarters* · Cleveland, Ohio

# Baking Enamels

Several thousand tested formulae of Baking Enamels in our files, enable us to meet practically any special requirement or peculiar condition that may arise in your plant.

Our regular stock materials probably include an item that will meet your demand.

The KAY & ESS Co.
DAYTON, OHIO

not reach the workers in the next booths where the other side of the product is painted. For the spray-painting of smaller objects booths are arranged with a turntable for complete painting in a single booth.

Naturally, conditions and requirements vary greatly in different plants and each system is planned and built for the specific work required of it. For instance, originally these stacks were designed to handle 10,000-cu. ft. of air per minute. The common use of nitro-cellulose lacquer and similar finishes made necessary a greater handling capacity. This need was met with an improved stack which is capable of moving 20,000 cu. ft. of air per minute.

This stack can be adjusted to handle just the amount of air needed. Its principle permits a high fan efficiency at a relative low consumption of horsepower. Furthermore, the fan unit is not located in the exhaust stack; it cannot become dirty, gummed, inefficient, nor a fire menace. The fan can be mounted on a lower floor, as shown in Fig. 2 or in the same room with the booths as shown in Fig. 1.

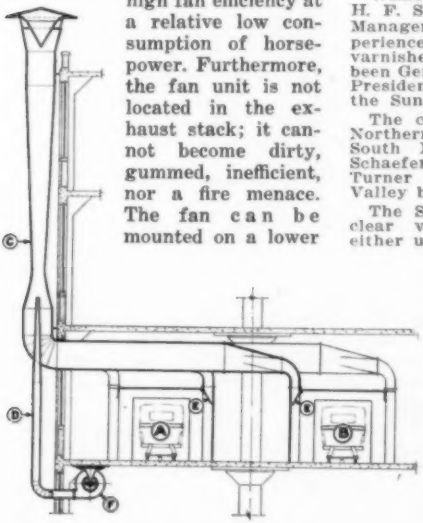



Fig. 2—Diagram showing typical arrangement of spray booths piping and exhaust stack in new automobile body plant.

Each booth is exhausted from a separate stack *C*, into which a powerful draft is projected by fan *F*, the fan blowing air through the pipe *D*. This creates a suction in the spray-booth piping.

The velocity of exhaustion required for the efficient operation of the booth is governed very simply by air baffle plate *E*.—W. H. R.

### *News of the Schaefer Co.*

The Schaefer Co., of Louisville, Ky., manufacturers of varnish and lacquers, is one of the younger companies in the finishing material field.

This company, which started operations Oct. 1st of last year, has been growing very rapidly so that increased storage capacity and lacquer equipment has been necessary to keep up with the demand made on the production department.

While the company is young, Mr. H. F. Schaefer the President and Manager has had 28 years of experience in the manufacture of varnishes and lacquers, having been General Superintendent, Vice-President and Sales Manager of the Sun Varnish Co.

The company is represented in Northern Indiana, West Ohio and South Michigan by Mr. W. C. Schaefer. In the South by Mr. H. Turner Fretwell and in the Ohio Valley by Mr. Louis Dobson.

The Schaefer Co. specializes in clear varnish and lacquer for either undercoats or finishing.

# Finishing Wallboard Panels

*Revealing several methods by which wallboard paneling can be finished in imitation of fine hardwoods—obtaining close resemblance in color, figure, grain and wood pores*

By C. L. Vincent

IN MANY of the better homes today, halls, dining rooms and dens are paneled with plywood panels veneered with popular cabinet woods, such as walnut, mahogany, gum, oak, etc. Some of the more modest homes have the panel effect in these rooms, but because of the great cost of hardwood veneered panels, some other form of panel is used. Sometimes there is no panel—just the molding to give the panel effect. In such cases the space within the frame is painted or papered, according to the fancy of the owner.

Within the last few years wallboard has become popular for paneling where the more expensive material cannot be afforded. Some of this wallboard is fireproof, and some of it is not. Some brands have one side pressed to a very smooth surface suitable for finishing; others have one side pressed to produce a pebble effect.

### Hardwood Figure and Color

The usual practice is to paint the wallboard, this being done because so few builders have thought of any other way. It can, however, be finished in imitation of expensive woods. The best way to imitate the figure of fancy veneers on wallboard is by means of the printing machine. The job must be done before the wallboard is placed on the wall.

This method gives an exact reproduction of the natural figure, because the roll that makes the figure is made by taking an impression of the wood to be imitated. If walnut or mahogany is to be imitated, any shade desired may be obtained by the use of the right color of ink. Some manufacturers furnish wallboard printed in imitation of oak, which can be made into any shade of finish desired. Probably the easiest wood for the interior finisher to imitate, is stripe mahogany.

There was a time when all graining was done with sponges, brushes and graining tools—when the graining roller was not used. For interior work that cannot be done with the graining roller or printing machine, the spray gun supplies a long felt want. Stripe mahogany is very difficult to imitate with ordinary graining tools.

### Ground Coat of Stain

Here, as elsewhere, there will be differences of opinion as to the best kind of stain to use. I have experimented on wallboard with water, spirit and oil stains, and have decided in favor of the former. It is less apt to fade than the other stains, and it has no disadvantage aside from the fact that, if applied too freely on certain kinds of wallboard, it may cause warping. But there is no good reason for applying the stain so freely as to cause this trouble.

*"Wears like Flint"*

# "What we have we hold"

is England's motto with reference to her Colonial possessions.

We adopted it also several years ago as a fixed trade policy.

As a result, besides holding our old customers, we have for the past four years been making a net addition of over 400 new industrial accounts yearly; many of them through the recommendations of regular users.

Our proposition embodies *quality, adaptability, specialized service and fullest value for your money.*

***A direct comparison of our goods with what you are using is our most convincing argument.***

Your problems are our business.

## THE CLEVELAND VARNISH COMPANY

Established 1881

3111 EAST 87th STREET

Cleveland, Ohio, U.S.A.

*MAKERS . . .*

*Varnishes, Lacquers, Enamels, Undercoatings*

# SHERWIN-WILLIAMS PAINTS VARNISHES

*If you want—*

1. A hard, tough, but not brittle film that is wear, water and weather proof;
2. A natural gloss which can be brought to a high lustre with the lowest labor cost;
3. Exceptional covering capacity with a minimum material cost;
4. An even flow and smooth surface free of bubbles, orange peel or blushing;
5. Fast lacquer enamels and colorless clears;
6. Uniformity of consistency, weight and shade;
7. No residual odor or toxic fumes;

Trade Mark Registered

*A few uses of*

OPEX

Furniture
Water Coolers
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**You will use**

OPEX

**The perfected lacquer enamel**

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# WILLIAMS
## LACQUERS · ENAMELS

## OPEX—*as Durable as it is Beautiful*

**Why** have so many manufacturers standardized on Sherwin-Williams OPEX? In the first place it is because OPEX possesses the beauty—the deep lustre and fast, vivid color—that enables them to ride the present-day tidal wave of public preference for the lacquered product.

But of equal importance is the durability of OPEX—the tougher, heavier, smoother film that is a direct result of employing a greater percentage of nitro-cotton gums and higher boiling point solvents *proportioned with scientific precision.*

And in addition to lasting beauty of OPEX, the man in the finishing department finds an easy working quality, absolute uniformity and added covering power that speeds production and cuts finishing costs.

THE SHERWIN-WILLIAMS CO.
CLEVELAND, OHIO

*The Perfected* OPEX *Lacquer Enamel*
*Trade-Mark Registered*

THE WORLD

There's a spluttering way

*and a*

# SPRACO WAY

of applying

Lacquer Finishes

*Just so sure* as gentle "April showers will bring forth May flowers," and their converse—driving rain and hail—will destroy their fundamental structures—

*Just so sure* will a finely adjusted atomizing Spraco Gun bring out the super-excellent shading effects of cellulose lacquers now perfected and distributed by reliable manufacturers—while its converse, a splutterer, will batter, pit and disfigure the artistic creation of the most skilled spray operator.

Select your Spray Gun with the same care a Scotchman selects his wife—"For she micht be a'richt and again micht no."

Every Spraco Gun "Looks right, feels right, works right and stays right because it's made right."

*Ask any Lacquer manufacturer about Spraco Equipment—then you will want our Bulletin 103*

**SPRACO PAINTING EQUIPMENT COMPANY**

**60 HIGH STREET -- BOSTON, MASS.**

**New York - Atlanta - Detroit - Chicago**

The ground coat of stain may be applied with either the brush or spray, and it should be a shade of color that will contrast harmoniously with the color used in graining. In fact, the graining stain should merely be a darker shade of the same color that is used for the ground color.

In making the ground color one must remember that when the figure is put in, the general color tone will be much darker. Before starting work on a room, the finisher should make certain that he has his colors ready to make the job just the way he intends for it to appear when finished.

We can scrape stain off a wood surface if a mistake has been made in the shade, but one cannot scrape wallboard and leave a surface that can be put into condition for finishing. A good test is to get a piece of the wood to be imitated and finished in the desired shade. Note carefully shade of color between the dark markings; then experiment on odd pieces of wallboard to get this shade of color for the ground work.

We must remember also that the more figure we put in, the darker will be the general appearance after the job is finished; also, the lighter the background the more distinctly will the figure stand out. Avoid great contrast between the figure and the background, or the figure will lose much of what should be its natural appearance. In experimenting to get the desired appearance, one should put in the samples the exact amount of figure per square foot that he will put in the finished job.

### Imitation Stripe Mahogany

Suppose we have a paneled room to be stained to imitate stripe mahogany, but we have no spray gun with which to do the work; it can be done with brushes, though not so quickly nor so perfectly as with the gun. Prepare the stains for the background and the figure and place them close at hand ready for use, together with the brushes. For the background use a brush large enough to coat the surface quickly. Use a 1-in. brush for the figure and a 4-in. blending brush.

After the background color is applied, and before it is dry, the artist may start to put in the stripes with the dark stain. The reason for starting with the stripes before the first coat of stain is dry is that they will blend out better then, than if one waits until the first stain is completely dry. The artist starts to put in the stripes, and continues until the first ones are almost dry, then he blends out each stripe to a feather edge, always working on the driest stripe.

### Using the Spray Gun

If the work is to be done with a spray gun, blending with a blender may not be necessary, as the spray will take care of it. A small gun is best for putting in the stripes. The distance to hold the gun depends upon its size and the width of stripe desired. It is not possible to give specific instructions regarding this; the operator must learn it by experimenting with the gun and stain before starting the work.

The air pressure is an important factor in determining the distance the gun should be held from the surface. If the pressure is high, it is difficult to work at close range. When striping,

the pressure should be low enough to permit of holding the gun within a foot of the surface; in some instances it may be necessary to hold it as closely as 6-in. from the stripe. In any event a high pressure is not necessary for use with stain of any kind.

It will improve some kinds of work if imitation pores are put in. This can be done by holding the gun far enough from the work to throw a spray over the surface, moving the gun rapidly over the surface to prevent the "specks" falling too closely together. In the case of graining with the brush, the pores can be put in with an atomizer, such as can be purchased at any drug store.

**Shellacing; Sanding**

After the stain is thoroughly dry, apply a good coat of shellac to seal the air cells and hold out subsequent coats of finish. It will help considerably in holding out the finish uniformly if two coats of shellac are applied, the first coat being reduced to 3-lbs. of gum to a gallon of solvent and applied freely and spread uniformly; the second coat being made as heavy as can be applied without brush marks.

As the first coat of shellac will be almost entirely absorbed, it should be sandpapered carefully with No. 2/0 sandpaper, using a felt block for the purpose, so as to cover the surface more uniformly than can be done if the sandpaper is used in the hand. The corners, of course, must be made smooth by folding the sandpaper and cutting them down with this, working the sandpaper into the corners with one finger. Sand the second coat also.

**Use Flat Varnish**

Large flat surfaces, such as we are discussing here, will present a better appearance if finished flat and without much body. Any one of the several free-flowing flat varnishes will make a good finish if applied smoothly and without specks of dirt. If the surface is not smooth it should be rubbed with oil and pumice.

It will help to keep the surfaces clean if all openings about the mouldings are blown out with a hand bellows after being dusted with a brush, and the whole wiped with a tacky rag. This latter can be purchased ready made, or prepared by saturating a soft cloth in varnish, then ringing it as dry as can be done with the hands, and spreading it out to dry until it becomes tacky enough to rub lightly over the surface without sticking. This tacky rag will pick up any particles of dust which cannot be removed with the dusting brush.

---

### *New Advertising Manager*

The Murphy Varnish Co. announces that Harry J. Hodges is now advertising manager, succeeding Harry C. Bursley.

---

### *A Book on Baked Finishing Equipment and Methods*

The Gehnrich Indirect Heat Oven Co., Inc., of Long Island City, N. Y., has recently issued an interesting and attractive book made up of bound loose leaves which illustrate and describe industrial ovens and all accessory equipment for japanning, enameling, lacquering, baking of armatures and insulating varnishes.

The ovens described include both gas and electrically-heated ovens; also ovens heated by other forms of heat. Methods of loading and the equipment for conveying material through ovens are described and illustrated. The book is free on request.

Good designing, fine materials and excellent construction can be, and often are, completely nullified by improper finishing.

Improper finishing is often the result of inferior finishing materials, but more frequently because the manufacturer has not put his finishing department on a BALANCED SCHEDULE, with BALANCED FORMULAS, and BALANCED ROUTINE.

The Wood Finishing Engineers of our Studio Service Department are specializing in the development and handling of finishes for wood products. Their study and research has been exhaustive. Today they offer you a service that is unique in the furniture industry.

They offer you BALANCED FINISHING.

We will be glad to tell you all about it if you will write. Just ask: "What do you mean by Balanced Finishing and how will it increase sales for me?"

**Grand Rapids Varnish Corporation**

Main Offices, Studio, and Factories—
**Grand Rapids, Mich.**

Chicago, Ill. - Los Angeles, Cal. - High Point, N. C. - Jamestown, N. Y.

# Refinishing Motor Cars in Small Shop

*Final installment of a series of articles by a consultant on finishing problems, in which detailed instructions are given for refinishing automobiles in the smallest type of shop*

By K. N. Kathju, M. S.

IN THIS article we begin with the preparation for and the application of the final finishing coat, after the entire car has already been given its colored lacquer coats.

First, for purposes of simplicity, we will assume that the owner does not want the car body polished, yet he wants a fairly decent finished product. In this event, the operator should proceed as follows:

Air dry last coat 30 minutes and water sand. Let car body air dry at room temperature for about 30 minutes and then water sand very lightly using No. 400 A1. oxide paper. The surface being sanded must be kept thoroughly wet with water and the surface must be sanded just one way, either horizontally or vertically. *Never haphazardly.*

### Spraying Finish or Mist Coat

For a one-color job, where the entire surface has been finished in one color, a wet coat of the following mixture should be sprayed on entire surface—barring fenders, etc., which may be of different color.

1. Lacquer thinner, 75%.
2. Clear automobile lacquer, 9%.
3. Auto lacquer (already on surface), 16%.

A car body sprayed with this mixture will have a high luster and should be allowed to dry 20 minutes at room temperature.

### Two-Tone Job

On account of the difference in the color scheme on two-tone jobs, it is not feasible to use the above mixture. For that reason the following is recommended.

1. Lacquer thinner, 90%.
2. Clear automobile lacquer, 10%.

This mixture may be sprayed over fenders, dust-shields, headlights, etc. In either case, the hood lying in a corner of the shop should not be forgotten; it must be given the same treatment.

### Polished Car Body

The last coat of lacquered surface should be air dried at least eight hours before proceeding to sand, else the entire finished surface will be full of scratches and present a foggy appearance after being polished.

If the lacquer has set hard the operator may proceed to water sand the entire surface, using No. 400 A1. oxide paper or its equal. Dip a quarter sheet of sandpaper in water and sand lightly to a smooth surface. Use skiver to determine whether or not all orange peel, dust, sags, etc., have been eliminated. If a perfectly smooth surface has been obtained, wash the entire car body with clean water and wipe dry.

Note: One of the best ways to determine whether or not the surface is dry enough to be sanded is to smell it. If you can

# SPRUANCE QUALITY

## PASTE FILLERS

**Spruance Quality Paste Wood Fillers**

**have proven their superiority in the finishing room because they:—**

1. Completely fill the pores of the wood.
2. Provide a firm and lasting foundation.
3. Reduce the number of finishing coats.
4. Wipe off easily, leaving no pin holes.
5. Dry hard in twenty-four hours.
6. Do not settle hard in container after thinning.

THE GILBERT SPRUANCE CO.
PHILADELPHIA

"A FINISH FOR EVERY PURPOSE"

detect the residual odor of lacquer thinner, it is not ready to be sanded.

### Polishing Operation

About the hardest work in finishing a car body is polishing. It not only takes time to accomplish this, but it requires plenty of muscle as well as patience. For sake of clarity the polishing method is outlined as follows:

1—Roll a piece of shirting or other soft material, like scrap wool or cotton, into a ball about the size of the fist and apply a small amount of a good grade rubbing compound over the surface of ball.

Note by Author: Since it is deemed unethical to mention brands of goods in editorial articles, I will omit same here, but will be glad to answer any inquiries to the best of my ability by personal correspondence.

Rub an entire panel at a time, continually using same either vertically or horizontally, but not with a circular movement, till the surface begins to "gloss-up."

2—Roll another piece of shirting and rub again without the use of rubbing compound; wipe off the surplus polish from car surface.

3—Use hard felt block close to mouldings, etc., to get rid of orange peel and to obtain a glossy surface.

4—Clean up the entire panel, removing all traces of rubbing compound.

5—Slick up, using a high grade lacquer polish, with a piece of bleached canton flannel (cheap cotton flannel).

Note: The rubbing compound should under no circumstances be applied liberally, as this will retard rather than hasten the cutting and polishing. Never dip the rolled ball of shirting into the can containing rubbing compound, as it will absorb more than the necessary amount of wax, oils, etc., leaving balance of the compound almost dry. Always smear it over the surface of the ball with fingers.

### Cleaning Windows; Assembling Fenders

At this stage, whether the car body has been mist finished or polished, the windows, hub caps and all other nickeled surfaces should be cleaned. If fenders were removed and bake-enameled, they should be assembled. All other equipment, door handles, etc., should be replaced.

### Finishing Belt Moulding; Striping

The method of striping has been discussed by an expert in the pages of INDUSTRIAL FINISHING, and needs no further elucidation here. However, the following may be inserted for reference.

The belt moulding should always be finished free hand in black brushing lacquer. If the operator does not have a steady hand, mask immediately above and below the moulding and spray black lacquer on. One or two coats may be needed. If the black is sprayed on, polishing will be necessary.

Thin stripes and belt moulding effects, where belt mouldings are not present, and other streamline effects may be obtained by placing two straight-edged pieces of paper with desired width between them. Then the lacquer may be sprayed. When dry (5 to 10 minutes) the paper may be removed, leaving a beautiful stripe, etc.

THIS drawer and inside finish will help to sell your product—No filling—no sanding—just spray two coats and the job is complete. Feels like velvet—looks like it was oil rubbed.

Dries within one hour.

**FLAT OIL FINISH**
is made in natural or any color desired.

**Advance Paint Co.**

*Manufacturers of Wood Finishing Materials*

**Factories: Indianapolis and Evansville, Ind.**

***Saves more than it costs***

Let us show you what a beautiful interior finish this makes by having our special representative demonstrate its wonderful labor-saving and business-building qualities.

In free hand work, striping or brush lacquers should be used. Oil stripes should never be used, since they can be readily wiped off and they will present a checked or cracked appearance when dry.

In general, the stripe must be solid in color and not less than 3/32-in. and not more than ⅜-in. below the lower edge of belt moulding. It must be not less than 1/10-in. or more than 3/32-in. wide, and must be placed around the entire car body, across side of "coupe pillars" and wherever customer desires.

Striping should only come up sharp to, but not over any beading or *T* mouldings, as used in some cheaper grade cars. Wheels, etc., may be striped to suit customers.

### Top Dressing

Using a 4-in. camel hair brush, the top should be dressed with some good grade top dressing. If the top dressing has a nitro-cellulose base, extreme precaution should be exercised in its use, since it is well nigh impossible to remove its spots from a lacquer finished surface. Spots of oil-base top dressing may be cleaned with gas. Dress sun-visor as well as roof rail, and other parts that need touching up with black brush lacquer.

### Inspection

A car thus finished in a modest repaint shop should be thoroughly inspected for defects, which should be taken care of before turning it over to the owner. If necessary, slick it up again with canton flannel and a good grade of liquid lacquer polish.

---

After all, he is human—the industrial finishing salesman.

## Novelty Furniture Finishing

I have had good success with the following schedule for finishing novelty wood furniture, such as telephone stands, smoking stands, book racks, etc.

1—Alcohol or water stain.

2—Fill open grain wood, using a filler made from silex to which is added equal parts of boiled oil and japan drier; color accordingly with dry color. Let filler dry 24 hours. Reduce the filler with turpentine.

3—Spray a coat of clean semi-gloss lacquer.

4—Spray finishing-coat of semi-gloss lacquer.—J. C.

---

## Aluminum Paint Used

The Semet-Solvay Engineering Corporation of New York has just finished constructing a complete Steere water gas machine for the Wisconsin Gas and Electric Co.'s plant at Waukesha, Wis.

In this connection it is interesting to note that all shells are being covered with aluminum paint, a recent departure in Steere water gas construction. Extensive investigation and testing have established that aluminum paint has much value in reducing losses from radiation. Its desirability in lending a better appearance to the plant has long been appreciated.

The last obstacle to its use was removed when a small gutter was placed at the top of the superheater shell to catch drippings of tar and condensate from the stack. All matter that might spoil the appearance of the superheater is captured and drained from the gutter into the seal pot, leaving the outside of the shell unsoiled.—News.

"Eliminate a Fire Risk"

NEWCOMB

SYPHON VENTILATED CABINET

THE "NEWCOMB" GIVES YOU everything you could want in a spraying cabinet and much more than you had thought possible.

Let us tell you about our latest and best development; the fan with direct connected motor, independent of booth, with rear of booth fitted with reclaiming chamber and baffle-doors.

**Grand Rapids Blow Pipe and Dust Arrester Company**

Dust Collecting Systems 527 Monroe Ave. Grand Rapids, Michigan

Kindly mention INDUSTRIAL FINISHING when writing advertisers

# PHOTOS *like these*

JUST one more piece of evidence in favor of Egyptian Lacquer for industrial finishing —shown by courtesy of The Monarch Machine Tool Co., Sidney, Ohio.

Our Service Department will be glad to consult with *you* on any finishing problem or special lacquer "prescription."

*Courtesy The Monarch Machine Tool Co., Sidney, Ohio*

# EGYPTIAN Lacquer

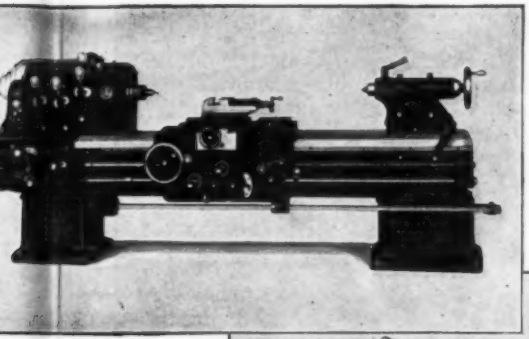
THE EGYPTIAN LACQUER MFG. CO., INC., 90 West Street, New York

*Completely equipped branches in charge of* practical men *are maintained in the following cities:*

ATLANTA, BOSTON, CHICAGO, CLEVELAND, DALLAS, DETROIT, LOS ANGELES, PHILADELPHIA, PORTLAND, ORE., SALT LAKE CITY, SAN FRANCISCO, SEATTLE, ST. LOUIS

*Write the office for "Egyptian for Machine Yours*

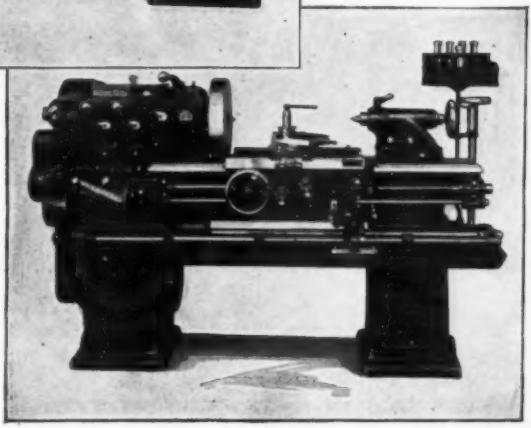
# speak louder than words



*The Monarch Machine Tool Co., Sidney, Ohio*

EGYPTIAN SUPERIOR LACQUERS

*The maker who is proud of what he makes, uses Egyptian Lacquer*



*Write the New York office for new booklet "Egyptian Lacquers for Machine Tools." Yours on request.*

# The Paasche Air Group

## *Leads in Performance*

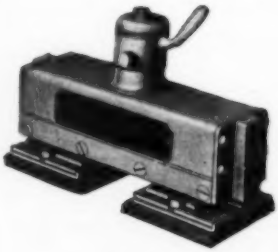
**Paasche Superior Air** [ Finishing Equipment
Rubbing Machines
Conditioning Units
Ventilating Equipment

are the most ideal for highest grade finishes—

Each tool is a component part of a thoroughly analyzed system of finishing by engineers who have spent 22 years on the solution of finishing problems.

The famous 3-in-1 Multiplehead Airbrush does higher grade work and covers a much wider range of applications, cannot clog, sprays evenly and quickly and will wear indefinitely; the ventilating equipment is fire proof, removes all fumes and speeds up production by bettering working conditions.

Ask for full description if you want to better your products at a lower cost. You cannot do the best and most economical work without Paasche Superior Equipment.



*The Multiplehead Airbrush. Light, well balanced. Material easily applied from finest spray to widest line.*

*1600 strokes a minute is the speed of the Superior pneumatic rubbing machine.*

Paasche Airbrush Co.

**1921 Diversey Parkway, Chicago, Ill.**

New York, N. Y.
Detroit, Mich.
Cleveland, Ohio
Pittsburgh, Pa.
Philadelphia, Pa.
Davenport, Iowa
Los Angeles, Cal.
San Francisco, Cal.
Seattle, Wash.
Denver, Colo.

*The Largest Exclusive Manufacturers of Air Finishing Equipment*

IF8-Gray

## New Heater-Ventilator Equipment

The two cuts herewith show different views of one of the "Sterling" gas-fired unit heaters, which has been successfully installed in one of Cincinnati's new

One side of the unit showing where gas piping enters the sheet- metal cabinet.

lacquer spray rooms to furnish a continuous supply of ventilation and hot air during winter months.

This heater operates under a forced air circulation and can be installed in a lacquer room, or the hot air can be piped to the lacquer room adjoining, thereby guaranteeing a liberal supply of warm air to replace the air exhausted through the spray booths.

The other side of unit showing sheet-metal piping arrangement, whereby air can be drawn in from the outside or inside of building.

This heater is operated with remote push-button control, wherein the electric connection through push-button control starts the fan motor, and operates a motor-driven gas valve, producing an instantaneous flow of warm air into the finishing room.

Since it is important to maintain a definite room temperature with instantanteous control of the heat available, it is believed that this type of heater will be useful for industrial finishing rooms.

The forced-air fan circulation guarantees the delivery of the full volume of heated air, while the deflector hood is adjustable to direct the heated air in the proper downward direction for the most satisfactory heating results. The air supply to the heater can be piped from the outside of the building, or room air can be recirculated.

These unit heaters are mounted on wall brackets or suspended from the ceiling from the roof trusses, giving full head room, with no interference to workmen and no floor-space is lost. The equipment is a product of Texo Sales Co., Inc., Cincinnati, Ohio.

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As a matter of average experience, it is reported that outside spray painting uses approximately the same amount of paint but saves from 60 to 80 per cent of the labor cost.

---

Statistics show that in the year 1924 the deterioration, due to lack of paint, amounted in value to the enormous sum of $1,800,000,000, or four times the fire loss during the same period.

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A job well filled is a job well done.

# Industrial Finishing

PRACTICAL PUBLICATIONS, Inc.
Publishers
Room 603, 222 E. Ohio St.
Indianapolis, Ind.

Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.


## EDITORIAL

### *Mechanical Finishing Equipment in Demand*

That there exists a widespread demand for mechanical apparatus which will perform efficiently and satisfactorily, certain laborous and tedious operations in finishing is evidenced by the number of inquiries that come into the office of INDUSTRIAL FINISHING from not only the U. S. and Canada, but from many foreign countries.

A recent letter, typical of the inquiries about rubbing, polishing and striping equipment, comes from "Spray Painters" of Woolloomooloo, N. S. W., Australia, and reads as follows:

"We have read in INDUSTRIAL FINISHING about a secret demonstration of a new rubbing machine and polisher, and would be very pleased to hear from the makers of this machine, giving full particulars and illustrations of same, together with any other good rubbing and polishing machine that you know of.

"None of these mechanical polishing machines have made an appearance on this market up to date and as I am anxious to get some of such, I would appreciate it if you would send along full particulars of their product. The ——— Co. advertise a pneumatic rubbing machine that looks very good to me and I would be glad if they would write me full particulars.

"Spraying has taken the Australian market by storm and there are a number of large shops turning out excellent work here, but none of us are down to hard tacks as to the quickest and best way of turning out a well-finished job as yet, and when the job is finished we all find ourselves faced with high costs of labor in rubbing and polishing.

"We are also very interested in a good striping machine of the *Aloka* principle. Can you get us particulars of these and other machines also?"

This letter was written before the concern received May or June issues of INDUSTRIAL FINISHING, in which appear advertisements of additional machines for performing rubbing and polishing operations. Others are promised for the near future. It is evident from this and from the fact that there is still so much hand rubbing being done, that some further development is needed in present-day rubbing machines, and with this development there is need of intensive sales effort to put the machines into service throughout the industries that have use for them. The more machines placed in service the greater are the possibilities of more improvements being made.

As for striping devices, we know of nothing which will lay on the material as uniformly and rapidly as the hand of a skillful striper. Perhaps some day something of the kind will be developed.

TRADE DURO MARK

## "Stands for Durability"

DURO finishes represent a standard, recognized line of Enamels, Lacquers and Undercoatings that have won an enviable reputation for quality in nationally known furniture lines.

BACK of DURO Finishes—a new and modern factory, a well-trained and skilled organization, color harmony and design advisory service, and traveling representatives who know correct finishing and progressive handling methods.

We solicit your inquiries.

**O'Neil Duro Company**

Established 1893

884 Greenbush Street Milwaukee, Wis.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

# Interior Decorative Paints

*Explaining certain characteristics and peculiarities of decorative paints for interiors; also, how to prepare surfaces, what to use for thinning and how to prevent such faults as visible laps, crawling, sagging, running and occasional flat places*

By E. Reynolds

INTERIOR paints for decorative purposes are subject to as many faults as are the exterior paints.

It must be remembered that linseed oil and varnish darken or become yellowish-brown when excluded from natural day-light, and inversely bleach when exposed to sunlight; therefore bleached linseed oil and very pale varnishes should be used for interior work.

### Paint Thinners

Oil and varnish impart luster to paints; turpentine exerts a flatting effect; benzine, as a thinner, has very slight or no effect on the gloss of paint or varnish. Gloss paints seldom show "laps" on brush work, but flat paints show laps most frequently and the more rapidly these set and dry the more distinct are the laps.

Rapid-drying, flat wall-paints are usually quite faulty in this respect, but the fault may be overcome by adding from 3 to 6 percent of water-white kerosene to the paint. These percentages correspond to $\frac{1}{32}$ and $\frac{1}{16}$ gallon of kerosene per gallon of mixed paint. The pigment part of these paints is usually lithophone; some contain a small proportion of zinc oxide also, and the liquid portion embodies generally a rosin-wood oil varnish containing more or less kerosene as thinner.

### Preparation of Surfaces

Mention has been made in a previous article on the treatment of plastered walls with "zinc sulphate wash" prior to papering; the same requirement holds true for painting, for unless the free lime has been neutralized it will strike through the paint and cause discoloration. Prussian blues are generally turned a dirty russet brown, and the chrome greens either fade to a sickly yellow or become brownish-green.

Another source of trouble to the interior decorator is the treatment of smoky and greasy kitchen walls. The regulation treatment for such walls has been to wash them with sal-soda water, rinse with clear warm water, and after drying off thoroughly with a chamois, apply a coat of glue size; but another method recommended by a competent decorator is this:

"Soak one pound of cheap sizing glue in one gallon of cold water during four or five hours; then dissolve by heat and coat the walls with this thin sizing.

*Dependable*
WOOD LACQUER
Made Since 1857
At our works—Newark, N. J.
*Pioneer Lacquer Manufacturers*
CHAS. COOPER & CO.
90 Worth St., New York---Works Newark, N. J.

*"For sixty years the Murphy Varnish Company has been making varnish. Sixty years is a long time—long enough to test any finish, or any reputation. If the Murphy Company has a reputation for making good finishes, it must be because throughout that sixty years it always tried to make the best it could."*

# IT MAKES A *BETTER* SHELLAC
## *at less cost*

Mix your shellac with Murphy Waterproof Mixing Lacquer to make it waterproof, tough, adherent. Mixes run from equal parts up to one part Murphy Waterproof Mixing Lacquer to four parts shellac, according to purpose. Apply as you would ordinary shellac.

HERE ARE THE HIGH POINTS IN THIS MIXTURE

*Costs less than straight shellac*
*Increases elasticity of finish*
*Better flowing qualities; sprays better*
*Dries as quickly as shellac*
*Builds a fuller finish*
*Greatly increased durability*
*Absolutely waterproof*
*Cuts sanding cost almost in half*
*Seals as well as shellac*
*Increased anchorage due to better pore penetration*
*Prevents shellac from scratching white*
*Eliminates pin holes*

All these advantages may be secured and cost decreased. It is to your interest to see this material demonstrated; write us.

Murphy

WATERPROOF MIXING Lacquer

MURPHY VARNISH COMPANY
NEWARK · CHICAGO · SAN FRANCISCO · MONTREAL

Allow it to dry; then wash it off with hot water and all traces of smoke and greasiness will be removed with the sizing."

### Paint "Crawling"

The "crawling" of paint on greasy surfaces or on an oil-gloss coat can be remedied by dissolving one ounce of sodium bicarbonate (baking soda) in four fluid ounces of cold water and mixing a little of this solution with the mixed paint. Four fluid ounces of this solution is sufficient addition to a gallon of paint.

The crawling of paint on a damp surface may be eliminated by mixing about one fluid ounce of denatured alcohol with half a gallon of mixed paint, but it is better to wait until the surface is dry.

### Paint "Sagging"

The "sagging" of paint is caused by the paint becoming slightly "fatty," as from an inferior grade of linseed oil, or from an excess of oil in the presence of too much drier. A small addition of gasoline sometimes corrects this difficulty. In a somewhat similar manner, if paste oil colors are thinned entirely with gasoline, the paint may be used for decorating, stencilling and lettering on tapestry and cloth without fear of the oil spreading.

### Flattening in Spots

The flattening of gloss paint in spots may be caused by moisture in the wood, sudden changes in temperature, by frost, and by the priming coat absorbing some of the oil from the top coats. The safest way to correct such blemishes is to wait until the paint is thoroughly dry, then go over the flat spots with a cloth moistened with boiled linseed oil.

### Paint "Running"

The "running" of paint, or separation of oil from the pigment —as often observed in paints made with such heavy materials as red lead and orange mineral —where the oil forms "spider legs", so called, is due to the heavy gravity and crystalline nature of the pigment. This trouble may be overcome by adding a small quantity of varnish, preferably a long-oil varnish neutral to lead.

American vermilion or basic lead chromate, which ranks so high as the ideal preservative coating for iron and steel, also is a very heavy pigment although less dense than red lead. However, it should be specifically mentioned, in this connection, that basic lead chromate paint produces a uniformly satisfactory coating without tendency to sag or run on perpendicular surfaces as is very frequently the case with red lead paints, especially if the reductions are not exactly right, or if the paint has not been kept well stirred, whereas sagging or running will not develop with the basic lead chromate paint, even though it is reduced more than it should be for best brushing consistency.

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## Template Locates Seals

In a factory that makes the desks that go with a certain business machine, a clever little method has been devised for putting on the seals. These wood tops are made of poplar and later the machines are mounted on them.

The machines carry the maker's name on an ornamental design that is well known, but it has

# Ed Smith's Page

## A LACQUER THAT TALKS 3 LANGUAGES

YOU know as well as I do, that to stay "sold" a Lacquer Enamel must talk three languages.

First—it must talk the language of the Purchasing Department, on the basis of price per gallon.

Second—it must talk the language of the Finishing Department on the basis of high building quality, maximum coverage, speedy application and minimum loss from evaporation.

Third—it must talk the language of the Sales Department—a superfine finish, produced at no increase in cost as a means to increased sales.

Only a lacquer Enamel that has perfect "balance" can meet all the requirements of these three distinct points of view.

Edward Smith's Escolac is just such a Lacquer Enamel.

In a nutshell, the superiority of this material is largely due to our method of balancing high-boiling solvents with a larger than usual proportion of solids.

The first feature of this formula is the assurance of least waste through evaporation between the spray gun and the surface to be finished.

The second feature is the deposit of the largest volume of lacquer in the least time—greater building qualities and also greater coverage per gallon.

The final result is the production of the finest finish with least number of coats and at lowest ultimate cost.

There you have perfection from all three points of view—the Finishing Department, the Sales Department and also the Purchasing Department.

If you will write your name and address on the margin of this page and mail to me I will be glad to send you a typical, average panel, showing the results secured with our "balanced" Escolac Lacquer Enamel. No obligation, of course.

Ed Smith

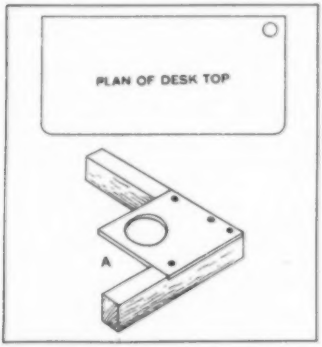
EDWARD SMITH & COMPANY

Makers of Paints and Varnishes for 100 Years

127 West Avenue
Long Island City, N. Y.

been found worth while to put the name on the wood tops also, inasmuch as a few are sold separately and, broadly speaking, it is a good policy to mark as many parts of a unit with the name as can be done without detracting from the general effect.

The finished desk tops are 1½x18x30-in. and have rounded corners and edges at the front, as shown in the drawing herewith. After passing through the machine sander the tops go to a




Above: Plan of desk top with seal at upper right hand corner.
Below: The template for marking location of seal.

small department where the finish coatings are applied. About 100 tops go through in a day's time. A spray booth and turntable are used. The wood surface is given a coat of filler and two coats of varnish.

As the tops are taken off the turntable, they are laid on racks for drying and storage until such time as the next process can be performed. After the filler is hard, a hand rubbing is given to smooth them up as they will appear in the finished state, for no other rubbing or sanding is done. It is at this time that arrangements are made for putting on the seals.

The template marked *A*, in the accompanying drawing, is used to locate the seal on each top. It consists of a wooden square with a plate of 24-gauge sheet brass screwed to the top of it. This brass plate contains a hole located equidistant from the inner faces of the square, and of the same size as the line that encircles the seal.

As a workman completes the rubbing operation, he picks up this template and lays it over the right rear corner of the top. His pencil is stuck under his cap and, with a single sweeping movement he marks a circle on the top, as located accurately by the template.

Later, when his decalcomania equipment is brought out, he sticks on the seals, using the penciled circle to locate the printed circle. It is better to do the work in this order than to mark the tops when applying seals.

The seal used for these tops is much smaller than that which goes on the machines, but it is a positive identification. With two coats of clear varnish applied over it, the maker's name is there to stay. An attractive seal of this sort costs practically nothing to apply and it is good advertising, besides adding something to the general appearance by setting off the sameness of a surface done entirely in one tone of finish.—D. A. Hampson.

---

Don't change your finishing material until you have found something that is "permanently better."

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## Red-S Building Coater

## Red-S Flat Varnish

*—One Coat of Each*

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*Manufacturers of*

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## Spray Gun News

The long extension for spray guns, as partly illustrated herewith, is another successful development to aid painting and reduce costs. This device is for painting ceilings, high walls, ship sides, tanks, freight cars, gondolas or other high surfaces without the use of so many ladders or scaffolding. This allows a convenient method of painting and a great saving in time.

The extension is a product of the Alexander Milburn Co., of Baltimore, Md. It grips the standard Milburn gun, which, while in use, can be swiveled to any desired angle—a constant necessity for proper painting operations.

The extension is 8 ft. in length and this, coupled with the operator's reach, projects the painting operation to an approximate height of 14 ft. Any length of extension can be furnished upon specification. For painting within arm's length the gun is immediately detachable and can be used as a hand spray.

A slight pull on the operating handle of the extension operates both the air and paint valves on the spray gun simultaneously. The paint, under pressure, flows to the atomizing chamber, is expanded and driven with ample force into the pores of the surface to be covered.

The extension unit consists of the extension and standard Milburn Type E Gun; pressure-feed tank with regulators, etc., mounted on tank head; 25-ft. air hose; 25-ft. paint hose and 25-ft. air hose with connections to connect from compressor to pressure container. The extension and gun only can be purchased, if desired, for use with any pressure-feed unit.

The extension is ruggedly constructed of strong tubing and has the gun and angle controls close to the bottom for easy manipulation of the spray. It is light in weight, well-balanced and easily handled.

*Automobile*
**LACQUERS**
**Free from gum**
**Give dependable finish**
**Established 1857**
**CHAS. COOPER & CO.**
**90 Worth St., New York---Works Newark, N. J.**

### *Du Pont Announces New Spirit Soluble Colors*

The Dyestuffs Department of E. I. du Pont de Nemours & Co. announces the introduction of an entirely new line of spirit soluble colors, which is being placed on the market under the name of Luxol Colors.

The outstanding features claimed for this series of colors are their high solubility, exceptionally good fastness to light and the wide range available. The Luxol colors are soluble in methyl and ethyl alcohol, pyridine, furfural, di-acetone-alcohol; a few are even soluble in acetone.

With those soluble in ethyl and methyl alcohol, it is said that the wood finisher will be able to stain wood previous to the application of pyroxylin lacquer without any danger of the color bleeding into the lacquer, at the same time by the use of these colors avoiding the raising of the grain and obtaining a fastness equal to that of the acid water stains.

The solubility of some of them in the higher alcohols makes possible a wide range for producing transparent-colored pyroxylin lacquers of exceptional fastness to light.

Clear and Colored Lacquers for Auto, Furniture, and all Industrial Purposes. Quotations and full information on request.

# Questions and Answers

*This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers*

## Lacquering Steel Machine Parts

Please advise how to lacquer steel machine parts which are to be used for display purposes, in order to keep them bright and to avoid rust while these parts are on display in dealers' stores. This is only an occasional operation with us and we have in the past experienced such trouble as clouding, peeling off and rough finish. Can you advise in detail the proper procedure for doing this lacquering? Can the cleaning and lacquering be done mechanically with the assistance of a continuous chain dipping the parts into tanks containing the cleaning fluids and lacquer, or would you advise hand work entirely or in part?—A. O. D.

---

There are several systems for lacquering steel parts to prevent them from tarnishing while on display in dealers' stores. All of them consist essentially of thoroughly cleaning the uncoated parts of all traces of grease, rust, dirt, or other foreign materials, and then dipping on a thin coat of transparent lacquer.

This can be done mechanically with the assistance of a continuous chain, provided considerable precautions are taken for thoroughly cleaning the parts and drying off of all of the moisture from the cleaning solution before they are dipped into the lacquer. This can be handled by passing the parts through a small heated chamber after coming from the cleaning solution.

Of course, care should be taken to thoroughly wash off all traces of the cleaning solution with water or other suitable solvents before they are dried, as otherwise a thin film of a chemical material might be deposited on the metal under the lacquer.

One system used for coating such parts as this, quite economically, includes the use of what is known as a water-dip lacquer. This lacquer is specially made so the clean parts, while still moist with water, can be dipped into the lacquer without danger of precipitating any of the ingredients in the lacquer. This removes the necessity of thoroughly drying the parts after they are clean, before lacquering them.

Your trouble of clouding in the past has probably been due to a high relative humidity in the atmosphere in which your finish has been dried. This can be prevented by lowering the relative humidity of the room, by adding a small quantity of rich, high-boiling solvent to the lacquer, or by passing the coated work through a slightly heated chamber until it is partially dry.

The peeling trouble is evidently due to not having the metal thoroughly clean at the time of finishing. The rough finish may have been caused by the lacquer having been applied too heavy, by dirt on the steel parts before they

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# FILLERUB

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**Economical**
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**OSCAR SMITH & SONS CO.**
**CLEARFIELD & C STS. PHILADELPHIA**

Kindly send full particulars and free sample of FILLERUB at once.

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.....

were finished, or by dirt falling in the lacquer in the tank, or after it is applied to the work.—R. L. Masterson.

---

For the prevention of rust on steel machine parts used for display purposes, we suggest a high-grade nitro-cellulose lacquer applied with spray gun. This lacquer must be reduced with thinner. It is very essential that the parts to be lacquered, first be cleaned thoroughly to remove any grease, rust or other foreign matter which may be on the surface. This usually can be removed with high-test gasoline or scrubbing with a rag soaked in thinner.—Binks Spray Equipment Co.

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## The All-lacquer Motor Car Finish

Practically all motor cars exhibited at this year's show have top coats of lacquer and some are lacquered from the bare metal up. Many qualified experts on finish, including those in some of the largest concerns furnishing lacquer finishes, are of the opinion that oil-type undercoats for lacquers will give way to those of lacquer-base type.

A number of large automobile manufacturers have been using lacquer undercoats for several years with excellent results. They have had none of the troubles due to lack of proper adhesion which causes peeling when the undercoats are not properly designed.

One large lacquer maker recently stated before the American Body Builders Association that pyroxylin surfacers have certain distinct advantages. He said they sand just as easily as the oil-type and provide a better foundation for lacquer top coats.

One great advantage claimed for lacquer undercoats is their rapid drying without the expense, delay and space required for oven equipment.—News.

---

**SUPERIOR WOOD STAIN POWDERS**

For Lacquer and all finishes.

Complete variety of shades. Samples and information on request.

**W. D. LOCKWOOD & CO.**
**314 W. 14th St., New York**

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### *New Officer in Republic V. Co.*

Harold B. Dearborn, for many years connected with the textile industry in New England, has been elected Vice-President of the Republic Varnish Co. of Newark, New Jersey.

Mr. Dearborn is the son of Charles H. Dearborn, also an officer of the Republic Varnish Co., who has long been identified with the paint and varnish trade.

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### *Pratt & Lambert, Inc., Triples Size of Lacquer Plant*

Work is progressing rapidly on the new addition to the lacquer plant of Pratt & Lambert, Inc., at 1445 West Ave., Buffalo.

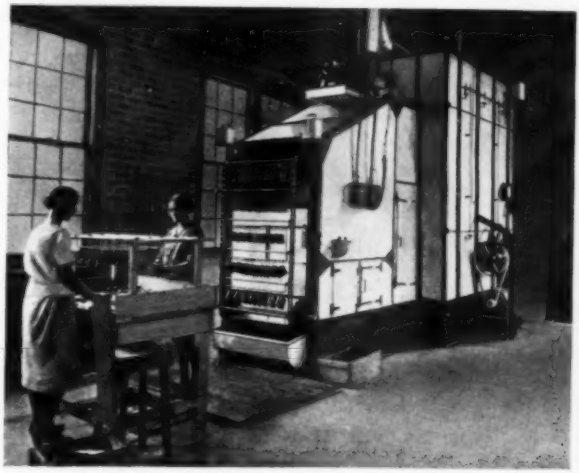
The new four-story building will be brick, steel and concrete throughout. As is true of all other P. & L. factories, it will be protected by the most approved fire-fighting devices. This new unit consists of a main building, a one-story boiler house and shipping room.

With these additions the total floor space of the Pratt & Lambert lacquer plant will be three times its former area, and this will make possible an output three to four times greater than the present capacity.

Two years ago Pratt & Lambert, Inc., began the manufacture of nitro-cellulose lacquer in a specially-built plant at Buffalo. Soon it was necessary to double the size of the plant devoted to this product. Now, again, in order to take care of the increased business on this product, the company is erecting another unit.

*This Section is devoted to the application, baking and polishing of finishes to be dried in ovens.*

# Baked Finishing



THIS remarkable oven dips and bakes over 40,000 small hardware parts each day. Saves Labor Cost, Floor Space and Fuel. Gives Superior Finish. Ask for instructive literature.

**The PAUL MAEHLER COMPANY**
**INDUSTRIAL OVEN BUILDERS**
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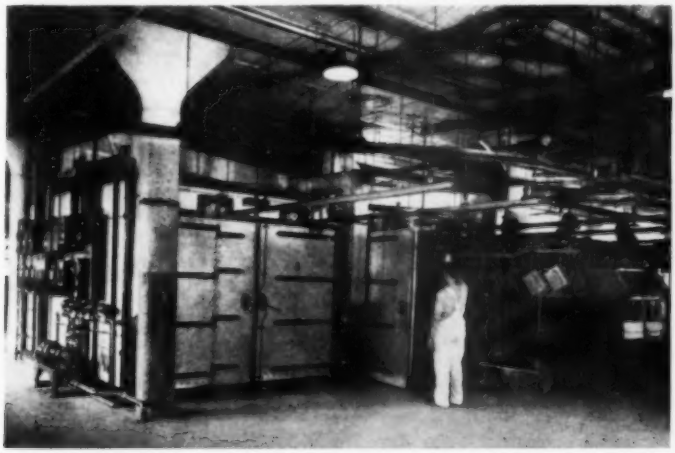
**No Piping Required** **Absolutely Automatic**

## GRINNELL COMPANY



The equipment illustrated above handles filing cabinets, drawers, holders and kindred parts by overhead monorail system through the ovens. Ovens are each 12-ft. wide, 17-ft. deep and 7-ft. high. The baking range is 300-deg. F., handling olive green and various primers for imitation-wood graining finishes.

The equipment has a unit gas supply and control system, interlock burner and pilot valves and control system eliminating the possible explosion of radiator gasses.

It is further provided with automatic air supply and ventilating system, timed with loading cycles, thereby eliminating the possibility of explosion of oven vapors.

In connection with these systems of explosion hazard prevention, automatic temperature control holds close temperature limits through full baking cycles.

An additional feature—through the use of a patented circuit—is that by action of opening one or more oven doors, the thermostat is prevented from responding to oven cooling, which ordinarily would cause gas burners to burn a full supply. In this case the gas continues to burn at a pilot flame only, regardless of oven temperature, and responds only when doors are closed.

# More Successful Bake Finishing

***Practical information on dip finishing, the heating and ventilation of baking ovens, the grouping of finished metal parts to be oven baked and how to make tests of japans and other finish materials***

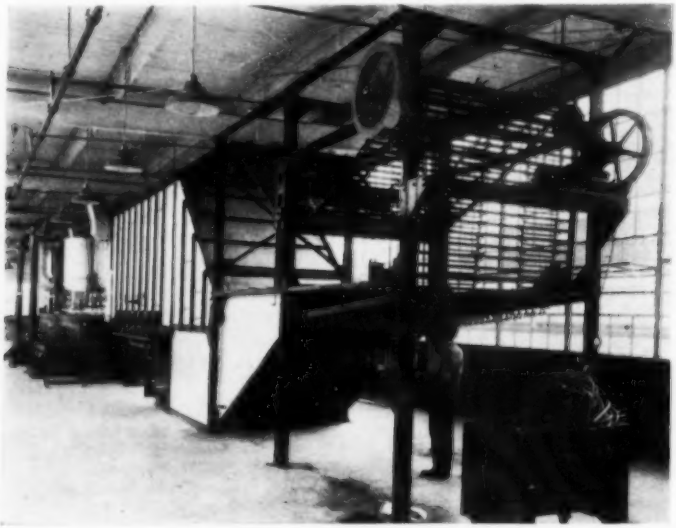
**By E. H. Langendorf**

REGARDING DIPPING: The dip tank should be so constructed that the largest article can be fully immersed in one movement, without holding it in two or three different positions to secure a satisfactory coating. Both in submerging the work and in drawing it out, care should be exercised to not disturb the japan any more than necessary, so as to avoid stirring up any settlings at the bottom or causing bubbles on the surface of the japan.

The article should be brought out of the japan with one swing and hung at once with the proper end up to obtain a complete flow

of the coating. To repeat, the operator should be careful to hang the article in such position as will promote the best flow of the japan; this position must be determined by trials. In general, however, the obscure parts of the work should be hung at the lowest level, as any sags are most likely to develop there, and also the drip points will be in a position that will not affect the value of the finished product. All work should be allowed to set from 15 to 30 minutes after being dipped, before going into the oven. Much trouble is caused by rushing the work into the oven too soon.

After the work has been dipped and allowed to drain until the japan is properly "set," it should be transferred to the oven as quickly, but carefully as possible, being very particular to avoid changing the relative position of the article when it is being hung in the oven. Otherwise the flow would be changed and result in sags and wrinkles. For the first part of the bake the heat should be run up slowly. If high heat is given too quickly and the ja-



The handling capacity of this machine is 20 million pieces of cold drawn metal mouldings monthly.

Material when loaded is conveyed through caustic wash, clear water rinse, and dried in its flight to the unloading end shown in this photo. The conveyor bars have permanent hooks on each bar which return over top of equipment.

Both waters are held to constant temperature by automatic steam regulators in the water coil lines. The tanks hold 7,000 gallons of water, each tank having a 30-h. p. circulating water pump, lifting water above the product in transit and discharging it through sprays over the work.

The equipment covers 90-ft. in length. Similar equipment is attached to a conveyor baking line whereby the fundamentals of washing, cooling, inspection, automatic dipping, draining, preheating, baking, cooling and unloading are accomplished without rehandling. This machine is essentially a new development and its particular features have been processed for patent protection.

Over a hundred lacquer manufacturers have tested Pent-acetate. Not one that has completed thorough tests rejected it for use in their lacquer Most of these have proclaimed it the finest lacquer solvent, all things considered, that they have ever seen.

More than thirty lacquer manufacturers are using Pent-acetate regularly in their formulae. Included in this number are seven of the ten largest in America.

The prompt and enthusiastic reception of Pent-acetate by the trade far exceeds anything ever previously known in lacquer solvents. The introduction of this product was considered by many an enormously difficult sales problem. It has developed into a challenge on the part of the lacquer industry to meet its demands for production These demands will be met.

*The* SHARPLES SOLVENTS *Corp.*
2304 WESTMORELAND ST PHILADELPHIA
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548B RAILWAY EXCHANGE BUILDING. CHICAGO

pan has not set long enough, the heat will soften the japan and may start runs or sags from cracks, seams, machined holes, bolt heads, or any other uneven places on the surface.

### Brittleness; Mushiness

The temperature must be uniform throughout the oven to get a uniform finish on all the work in the oven. Actual tests have shown that in some cases there is a difference of 75 to 100-deg. F. in different parts of the same oven. At excessve temperature, the life or elasticity is baked out of the japan and then it is brittle; if baked at too low heat the finish or coating is "mushy" and then it is easily marred. Mushy undercoats, due to insufficient baking, are likely to cause the finishing coats to sink in and die away in luster within a short time after they have been applied, although the work may have appeared all right immediately after it was finished.

### Thickness of Metal Baked

Castings and other heavy metal parts require more heat to raise their temperature to a given point than thin sheet metal. For this reason it sometimes happens that the japan on heavy castings will be underbaked, while that on sheet metal, baked in the same oven, will be perfectly hard. Or, if the japan on the castings is baked hard, that on the sheet metal may be overbaked to such an extent that it is brittle. Because of these differences, it is desirable that metal of the same general weight should be baked at the same time. Heavy castings should not be baked with thin sheet metal.

In a large oven the heat will naturally run up gradually, which is as it should be, and also it requires a certain amount of heat to bring an ovenful of work to a given temperature. Depending upon the type of oven, the quantity of work, the weight of the metal, etc., different lengths of time will be necessary to accomplish this—meaning that more time should be given in baking an ovenful of work, than if the oven is only partially filled. This fact should be borne in mind if uniform results are important; otherwise some work may be underbaked at times and overbaked at others.

### Temperature and Time

In the main, baking japans usually show good results when baked at a higher temperature and for a shorter time than ordinarily used. To indicate what is customarily considered safe procedure, the following table is submitted:

2½ hrs. at 250° or 2 hrs. at 300° or 1 hr. at 350° or ½ hr. at 400°.

3 hrs. at 300° or 2 hrs. at 350° or 1 hr. at 400° or ½ hr. at 450°.

3½ hrs. at 350° or 2½ hrs. at 400° or 1 hr. at 450° or ½ hr. at 500°.

Low-heat enamels should be run up to about 250-deg. F. in say half an hour, and the temperature held there until the enamel is baked hard. All baking enamels and japans can be baked at the temperatures indicated for the period of time shown, allowing about three-quarters of an hour to reach the desired maximum temperature. Set rules of time and temperature cannot be prescribed because conditions will vary somewhat in very large ovens with considerable tonnage of metal, and in such cases the experience of the japanner will guide him in obtaining satisfactory results.

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Provides comfortable protection and natural breathing at dusty work and spraying operations. Light, durable and well balanced. Fits anyone comfortably and does not interfere with vision

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*Manufacturers of industrial safety goggles; welding helmets and handshields; and respirator masks for dust, spray, fumes and smoke.*

# Nu Polish

This Polish is highly endorsed by finishing rooms in large plants for the polishing of

*Lacquer on Wood or Metal*

also

*Baked Varnishes*

It is free from

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*OUR GUARANTEE*
Send for five gallons—Prepaid—
If not as we claim, return it.

**Jamestown Wood Finishing Co.**
**Jamestown, N. Y.**

STAINS J C W F FILLERS PAINTS

A capable japanner always studies the peculiarities of his ovens, generally making notation of temperatures at intervals of 15 or 20 minutes and, at the completion of the bake, he compares the record with the results obtained. Usually it is safe to raise temperature and shorten time, but it is not always safe to lower temperature and lengthen time. The reason is that some japans which take on a hard glass-like surface in one hour at 400-deg., could never be made to harden out thoroughly with any amount of baking at say 200-deg., to 250-deg. F.

### Pigmented Japans

Some japans contain pigment, and are commonly termed "rubber japans," or semi-gloss, etc. These should be thoroughly stirred or agitated before being drawn from the container. This class of pigmented blacks must be baked at a temperature at least as high as the minimum range of temperature given for a particular japan, to insure the desired finish.

It is well to know that to get uniform results, the high point of temperature should be about the same for each bake, for the tendency is to bake somewhat more dull finishes at higher temperatures, as for instance a japan baked at about 380-deg. F. to a black satin or gun-metal finish might also result in a blued-steel effect when baked quickly at from 450 to 500-deg. F.

In conclusion:

When experiencing difficulty with baking black goods, a few simple tests, as given in the following paragraphs, generally show whether the fault is in the work room or possibly due to defective goods.

# Armitage ARMORCOTE BAKING ENAMEL

PROTECTS metal against the elements. A durable baking enamel that combines vitrified hardness and elasticity, and it does not chip or check.

Leading automobile and metal products manufacturers use **ARMORCOTE.**

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Each compressor is given a running-in test against pressure to assure satisfaction in service.

**Mass production** insures uniformity and interchangeability of parts.

**Laidlaw Feather Valve,** simple, efficient and durable, will not fail.

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**All bearings adjustable** for wear and easily replaced. Shaft, crank, pin and counterweight, a one piece drop forging needs no repair. Balanced crank and flywheel prevent vibration.

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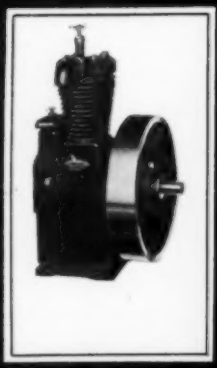
Worthington Vertical compressors are of design and workmanship to give better and unfailing daily use.



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### Important Tests

Take a clean piece of window glass, dip it in the suspected material, and bake it in the same oven beside another dipped piece of the work which came out bad. If the finish on the glass is all right, that should prove that the trouble is not in the japan, but rather in the metal; if the finish on the glass also is bad, the japan should be investigated further.

Take a cupful out of the barrel of suspected goods—or, if empty, from another barrel of the same shipment. Reduce the material and compare it baked on glass and metal with the results from the dipping tank. If this test comes out bad, try another sample from the barrel and reduce this with kerosene. If this also comes out wrong it is reasonable to assume that the japan has been responsible for the trouble—providing it has been definitely ascertained that the oven is working all right.

If the test from the barrel comes out right, that indicates there is something wrong with the material in the dipping tank, and it should be investigated as to faulty reducer used, whether it is contaminated by oil or dirt from dipping unclean metal, or alkali from washing down the tank, etc.

## Cleaning Metal for Japanning

Grease is often in the pores of rolled or drawn steel, and invisible to the eye; this is because some sheet steel products are purposely given a coat of oil to prevent rusting during storage or shipment. Of course, if this is not very thoroughly removed, the finish will not adhere

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*"Nitrators since 1898"*

When writing for samples please state quantities, grades and viscosities desired.

—particularly at seams, edges, and corners, around bolt heads and similarly—and the work will also be full of innumerable small pit marks from oil in the pores and sometimes large uneven blotches show up where the surface was unusually greasy, by the heat forcing out more of the oil from the metal during the baking of the japan.

In severe cases the article may be taken from the oven with hardly any coating of japan on it, because the japan could not anchor anywhere on the greasy-filmed steel. The most efficient way to eradicate greasiness from steel is by first washing with naphtha and then heating the article in the oven for 30 minutes at a high temperature, 400 to 500-degrees F., until the metal is blue. This drives out all oil from the steel and burns it off; then, after cooling, the japanning can proceed without trouble.

Some concerns use a caustic soda solution or other chemicals for this purpose, but all traces of these materials must be thoroughly washed away with clean water, because strongly alkaline solutions are liable to cause a condition of pitting similar to that due to grease on the work, and if allowed to remain on the metal, they are likely to cause rust to develop later beneath the finishing coats of japan, which then scales off.

Rust or foundry scale also must be thoroughly removed before a smooth and dependable finish can be obtained. Where both grease and rust are present in the metal, and the pieces, like auto fenders, etc., are so large that other removing processes are too slow and tedious, "pickling" is resorted to. The procedure is as follows:

# Spray Hose Couplings

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Canadian Distributors
WILLIAMS & WILSON, Limited
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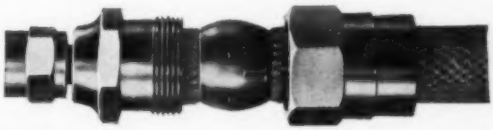
*Makers of the famous Sphinx Glass Run Channel.*

*Sales Agents for the Eastman Mfg. Co.*



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Just as modern paint spraying methods are miles ahead of the first "slow motion" machines, so are Quincy Compressors way in advance of the noisy, rattling, slow pressure compressor of early days.

But to assure the success of even a modern spray gun, you must have a Quincy to furnish the air. Clean, dry air at a steady, even pressure and a paint job to be proud of are the results if a Quincy is used. Many of the leading spray gun manufacturers have selected Quincy Compressors to complete their paint spray equipment. Demand a Quincy and there'll be a demand for your service.

*Write today for complete information*

## QUINCY COMPRESSOR CO.

**305 Maine St.** **Quincy, Ill.**

K307

In an iron tank of suitable size, make a solution in proportions of one pound of caustic soda to each gallon of water, and keep this hot by bubbling live steam through a pipe with an outlet near the bottom of the tank. Have at hand another tank—or preferably two—with inlet for running water at the top and an outlet at the bottom to keep the water clean and pure; heat this with live steam as in the soda tank. Next have a lead-lined wooden tank filled with a solution of dilute sulphuric acid; one pound of *acid added to* each gallon of *water*, adding more acid from time to time as the mixture becomes weaker.

*Notice that the acid must be added to the water. Never attempt to add water to sulphuric acid, as this will cause a violent explosion.*

Hang the metal to be cleaned in the hot soda tank until all grease is removed; then rinse in the hot water tank, and immerse in the acid tank long enough to remove all rust. The acid will also neutralize any alkali left on the metal from the soda bath. Finally rinse very thoroughly in the hot water tanks and remove to another room to dry. Rinse more than necessary rather than too little, and be sure that the rinsing water is absolutely pure. Both acid and alkali are injurious to enamel, and numerous troubles arise from insufficient rinsing in clean water. Pickling should be done in a room partitioned off, and away from other work. Otherwise, rising steam may deposit globules of alkali-or-acid-laden moisture on other work with harmful results. Do not allow the metal to lay around very long after cleaning, and be care-


# DU-PROS SHELLAC

## *Made by an Improved Process*

When you buy Du-Pros Shellac you buy not only the purest shellac, but the extra quality built in by our double process of manufacturing. Du-Pros Strictly Pure Shellac is nothing but regular shellac gum of high quality, cut in Government test alcohol. Nothing is added and nothing is taken away. But the extra process gives it extra value.

Du-Pros gives a heavier, smoother film and it spreads farther. It does more but costs no more.

*Ask for sample*

JAMES B. DAY & CO.
1872 Clybourn Ave
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*Manufacturers of*
WOOD FINISHING MATERIALS

ZELLAC

# How Is Business?

Some manufacturers haven't realized the selling advantages of Zellac-finished products.

The utmost salability of your products is reached only when finished with Zellac lacquers or lacquer-enamels.

We have reports from many manufacturers advising that Zellac increases sales because of incomparable beauty and supreme durability. And users of Zellac obtain these advantages with amazing economy.

Let our lacquer experts prescribe the grades of Zellac best suited to your purposes. Send us full details of your finishing needs.

**FREE**—*Zellac Tags* are attractive—threaded with handy cord loop for attaching to your products. *Zellac Tags* identify your products as "Finished with Quality Lacquer"—the finishing material most in demand today. *Zellac Tags* are provided in quantities—*free*, upon request by an executive.

**ZELLER LACQUER MFG. CO.**
**Zeller Building**
**20 East 49th Street New York**

*Stockrooms and Offices at:*
Chicago: 551 West Lake St., Los Angeles: 786 Ceres Ave., San Francisco: 67 Steuart St., Denver: Ormor Sales & Supply Co., 503 Fourteenth St., Distributors. Wichita: Ormor Sales & Supply Co., 438 N. Main St., Distrib'rs.

ZELLAC

ZELLAC

ful to not touch the exposed surfaces with damp or sweaty hands before enameling.—E. Bain.

## Tumbled Metal Finishing

Along the line of tumbled finishes, we have had a peculiar experience recently which might prove of general interest to readers of INDUSTRIAL FINISHING. A stove manufacturer asked our opinion of barrel japanning stove bolts for enameled stoves. The writer did not believe it was practical to japan these because of the threads clogging.

However we tried a few and found that by applying two thin coats of lustrous black japan (baked) that the result was very good. The bolts had enough color for a good appearance but not enough to interfere with the threading.

Further inquiry has brought out the fact that many of the stove companies are now setting up these bolts on a rack and spraying the heads only. This is an expensive process and can be abolished by the barrel method.

There are many other places where this same kind of bolt is used, particularly in joining sheets together and framework that uses any color scheme.—H. C. Booth.

## A Dip Gilding Solution

The writer recalls how, near the end of a foundry course, we students were allowed to mold and cast a pair of bronze book ends having the University seal upon their outer face. After these castings were cleaned up, we took them downstairs to a room adjoining the machine shop where there was a crock of sweet smelling liquid under a bench.

CURTIS COMPRESSORS, HOISTS, CRANES, CAR WASH SYSTEMS, PORTABLE COMPRESSOR UNITS

# To Keep Oil Out of the Paint, Give Your Filters a Chance

Suppose your paint spray compressor quickly throws an excessive amount of oil! Then the filter is clogged and oil goes into the paint. A job ruined—time lost cleaning the filter.

The Curtis Controlled Splash Lubricating System really protects your filter against excessive oil. Special devices, found only in the Curtis pick up *just enough* oil and place it *only where needed*. There is no surplus to carry into the air line.

Practically all paint spray equipment makers use or recommend Curtis Compressors. They realize the great value of its protective features. Also, they know that each Curtis Compressor has behind it:

(1) An engineering staff with a knowledge of pneumatic engineering gained through 30 years of research and experience;

(2) A manufacturing organization whose sound policy and strong financial standing have been developing for 73 years;

(3) The "Okay" of expert testers, who will not pass a compressor until it has withstood a rigid individual *work-test*.

Study their design and construction and you will know why Curtis Compressors are leaders in every industry.

MAIL COUPON TODAY

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Please send me information about Curtis Paint Spray Equipment.
Name .....
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P11

# CURTIS COMPRESSORS

CURTIS PNEUMATIC MACHINERY COMPANY, ST. LOUIS, U.S.A.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

# Furniture Beautiful

**SPEAKS WELL FOR THE FINISHERS' HANDICRAFT**

Consciously or not, the buyer expresses his preference because the finish emphasizes character and distinction.

Years of experience have brought to us a full appreciation of the fact, and it alone guides us in the manufacture of Dolan finishes of "Unquestionable Quality."

Items of special significance at this time include—

**"444" Lacquer Shading Stains** Embody the perfected elements for the delicate high lighting so much in vogue on finer furniture at the present time. Smoothness in spraying—do not run or bleed. Try them.

**"555" Lacquer Fillers** May be Sprayed or Brushed. Characteristic of DOLAN "Unquestionable Quality" the "555" Lacquer Fillers are dependable—do not bleach or blush. Are rapid drying. Pores are permanently filled. They will meet your exacting requirements.

*Liberal co-operation on your finishing problems*

**STAINS — FILLERS — SHELLAC — LACQUERS**

**V. J. DOLAN & CO.** 1832 N. Laramie Ave. Chicago, Ill.

# KROEGER BROS.

MANUFACTURERS
SINCE 1887

## WOOD FILLERS
## STAIN POWDERS
## STAINS

LET US MATCH MATERIALS YOU ARE NOW USING AND SUBMIT SAMPLES WITHOUT OBLIGATION OR COST.

**882 McKIM ST., BALTIMORE, MD.**

We immersed the castings in this crock for a few seconds, to impart to them a fixed color that is known in the giftshop trade as "bronze," even though it is many shades darker than the true color of bronze.

The liquid in this crock was called "liquid liver"—a name that employes of the shop had given it, for no good reason that we could see—and this was all the information we could get as to its composition. It is the purpose here to give the composition of a "liquid gilder" that is as effective as the bronzer and which may be of use to others who wish to dip small metal articles that are to be so finished.

Dipping is so much quicker than brush coating that it appeals to everyone. In most cases it is more thorough and uniform. As long as there is one spot where the "drop-sure-to-form" will not matter, then the articles may be dipped successfully. We are considering, of course, those parts that are not made in large enough quantities to be sprayed with some sort of a solution—assuming that one is available.

For this purpose, the solution is made of:

| | |
|---|---|
| Water | 1 gal. |
| Gold chloride | 1/3 oz. |
| Sodium cyanide | 4 oz. |
| Soda ash (58%) | 6 oz. |
| Sulphite of soda | 1 oz. |

This solution is best used in a cast iron receptacle, the most readily obtained being a household iron kettle. The kettle is ground free of scale on the inside and so is admirably adapted for such purpose. It is easily cleaned also.

Like so many other coatings applied to metal, this one adheres best when its temperature is

*High Quality Finish At Low Cost With*

**HANDIGRIP GUN**

HANDIGRIP spray painting equipment makes high quality finish a mechanical certainty, with a great saving in time and at a low cost for labor.

Cup Gun

The HANDIGRIP gun is simplified to the last word. Except for the turn of a nut to adjust the flow of material, it does its work without adjustments of any kind.

The self-aligning retainer holds the nozzles in perfect alignment; the spray is completely atomized from edge to edge. The automatic spring valve instantly controls the spray; application of paint is smooth and even. The gun is balanced, relieving the fatigue of hours of continuous work. Ease of operation is doubled by the two-finger trigger.

With the HANDIGRIP you can do an hour's work in a few minutes, and the distinctive HANDIGRIP features insure flawless results.

Pressure Feed Gun

HANDIGRIP handles lacquer, paint, enamel, varnish or wet porcelain. It is easier to clean than a brush. It is used either with a quart cup or with a tank from two or ten gallons capacity. Guns furnished separately or with complete outfits in small and large sizes.

Plummer-Huff Company positive guaranty provides demonstration in your own work. Write for particulars. Kindly address Dept. F

**PLUMMER-HUFF COMPANY**
**Napoleon, Ohio**

*When Reason preaches, if you won't hear her, She'll box your ears.*

Ben Franklin was responsible for the first quoting of this truth, and a well-wisher has voluntarily brought it up-to-date.

Two months ago we headed an advertisement with a little poem about Bread and Beans, which evidently proved an inspiration for John A. Twamley of the Stalker Sash and Door Co., of Rochester, N. Y., who wrote as follows:

Alaka Lacquers are the best,
No better can be found.
The man that uses them today—
Possesses judgment sound.
. . . . . and also . . . . . .
We time have saved and money, too,
Our troubles now are o'er,
Our customers do not complain
The way they did before.

We wish to announce that we will pay one dollar in American money to everyone sending in jingles of four lines or more on the v irtues of *Alaka*, the Practical Lacquer . . . . and if you write for (1) Finishing Facts (2) Samples (3) Salesman—you will learn a number of Alaka virtues about which to jingle.

**LACQUER & CHEMICAL CORPORATION**

**Makers of ALAKA Lacquers**

214-224 Fortieth Street
Brooklyn, N. Y.
Sunset 4864-5-6

CHICAGO BRANCH
1275 Wade Street, Chicago, Ill.
Armitage 9612-3

above that of the atmosphere—in this case, from 140 to 160-F.

Metal parts may be dipped in this solution and have imparted to them a gilt or gold coating that is more lasting and smoother in appearance than that given by using some ordinary gilts or enamels which are sold at retail for brushing. Some of the latter give the impression of being "cheap," that is, unsatisfactory on many new articles and in connection with high-grade major parts of wood or other materials.

For hardware, ornaments and trimmings, this dip solution will be most convenient. The better cleaned the metal parts are (either iron, steel, or brass) the better the coating will stand out; this has much to do with the time of immersion, which must be determined by trial, anyway —Donald A. Hampson.

## Japan Reducers; Temperatures

In general, petroleum naphthas are the best reducers of baking blacks. Light naphtha should be used where small parts are being coated, but for larger work it is usually necessary to use the heavier and s l o w e r-evaporating naphthas in order to retard the "set" of the japan, and allow it to flow freely.

The safe method in choosing a reducer is to let the maker of the baking japan supply this also, because he should be in better position than an outsider to know what is best for thinning down his goods, and furthermore he becomes responsible for the quality of the reducer and is careful that it does not contain such detrimental impurities as grease, paraffin, water, or acid.

# Thru Hail and Sleet and Storm

*The Aeroplane of Today Demands*
*A Varnish That Stands All Tests*

## Chinol Waterproof Varnish *will* Stand All Tests

***Test Chinol for toughness.*** Soak it in water, not only overnight but for weeks. Will not bloom or whiten. Will not crack, chip or scratch white.

*Remarkable Resistance, Unequalled in Value at Our Low Price*

**Write for Free Sample and Quotation**

**The Excelsior Varnish Works, Inc.**
CLEVELAND

Various Uses:

*Aeroplanes*
*Autos*
*Furniture*
*Refrigerators*
*Trunks*
*Screen Doors*
*Boats*
*Toys*
*Machinery*
*Implements*
*Washing Machines*
*Stampings*
*Etc.*

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—From our complete new catalog we supply a nation-wide market—

*Everything For The Painters Use*

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**"The Paint People"**
164 W. Lake St. CHICAGO

# For a Better Finish Use GRIFFITHS

## AMERICAN GROUND ITALIAN PUMICE STONE

A 99% pure product, uniform in grain and hardness. Goes further because each individual particle cuts uniformly, besides producing quicker and better work for the same reason. Our service is also an important factor, since direct importation and our own large and modernly equipped factory enable us to meet your requirements immediately. Try us.

**K. F. GRIFFITHS & COMPANY, Inc.**
**110 East 42nd St., New York, N. Y.**

**GRIFFITHS GUARANTEED PRODUCTS**

Powdered Rotten Stone
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Polishing Felt
Carbon-Tetra-Chloride
Oxalic Acid
Rouge
Soap Bark

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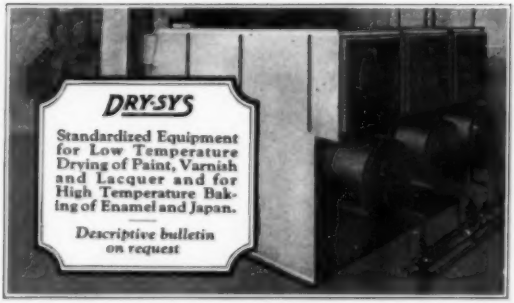
DRY-SYS
Standardized Equipment for Low Temperature Drying of Paint, Varnish and Lacquer and for High Temperature Baking of Enamel and Japan.
Descriptive bulletin on request

**DRYING SYSTEMS INC.**
**1800 FOSTER AVE.**
**CHICAGO, U.S.A.**

NEW YORK · DETROIT · ATLANTA · CLEVELAND · SAN FRANCISCO

To test for grease, flow a small amount of the reducer onto a clean white letter paper and allow it to evaporate; if a greasy stain is left after an hour or longer for complete evaporation, the reducer is not safe for use in other japans than those baked at very high temperatures, such as wherein kerosene may be the correct type of reducer. Paraffin can be detected by cooling a small sample of the reducer to about 30 degrees F.; if any white specks appear, do not use the reducer in japan.

Water can be removed from a reducer by straining it through a chamois skin, which will absorb the water out of the reducer. Test for acid and alkali with litmus paper or some other indicator.

Reducers, japans or enamels should not be left in the cold for more than a short time before being used. If the reducer is left outside during a cold night, and then used the following morning, the japan will likely become chilled to the extent that it will not flow properly. If possible, the mixing should be done the same day, so that overnight the mixture will warm up to normal room temperature. This usually obviates the otherwise probable difficulties which even then might ensue from damage already caused, if the cold solidifies small particles of matter in the reducer, and then it would show up in the finished work as pitting or other defects.

It is even more dangerous to store japan in the cold, as certain reactions are likely to occur under such conditions that might cause a perfectly good japan to produce bad results.

Proper working conditions are always obtained when the temp-

"AROLAC for EXCELLENCE"

AROLAC

It was our ambition for decades to have lacquers and lacquer enamels excel regular paints and varnishes not only in technical advantages and chemical supremacy, but also in dollars and cents. This is now realized in AROLAC Products. By this, we mean, first: the *covering capacity* of AROLAC; and second, the *price*, which makes the use of AROLAC an obvious necessity.

ASK FOR OUR AROLAC

Wood lacquer, Silver and Aluminum lacquer, Bronze lacquer, Brush Brass lacquer and enamels in all colors, glossy and egg shell finishes.

**ARIZONA LACQUER MFG. CO.**
7-11 Sixteenth Street
BROOKLYN, N. Y.
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This vegetable gum oil

**SOLVENT**

is a faultless brush or spray base—a perfect rust-proofing material—and a color extender.

Used as you would oils, turpentine and driers in mixing paints, none of which are necessary when using **Solvent Gum Oil.**

Remarkable results can be obtained by using **Solvent Gum Oil** and iron oxide or leads ground in oil for rust-proofing iron or steel.

**Solvent Gum Oil** used as a primer under lacquers and varnishes is unsurpassed.

Easy to brush—excellent for spraying—ask for more details.

**Detroit Universal Solvent Co.**
4221 Michigan Ave., Detroit, Mich.

"PARAMET"
(ESTER)
LACQUER GUM

Increases adhesion. Makes for greater gloss. Insures maximum toughness in nitro-cellulose lacquers.

Manufactured by
Paramet Chemical Corp.
LONG ISLAND CITY, N. Y.

$74 "EUREKA" $74
CURTIS AIR COMPRESSOR

Size 2½" x 2½", 10" x 30" Air Tank, Gauge, Safety Valve, Drain, ½ H. P. Motor, Belt, Electric Cord and Plug. Exactly as shown. Twice the capacity of other makes.

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Eureka Pneumatic Spray Co.
8728 130th Street
Richmond Hill, L. I., New York

We also make a complete line of Air Compressors, Spray Guns, Booths, Exhaust Fans and Equipment.

erature of the japan and the work are about the same—say 70 to 80 degrees F. at the time of coating. As a rule, warm japan should not be applied by dipping or spraying onto cold metal—if the temperature of the metal is below 70-degrees F—as the japan may be sufficiently chilled to "stop flow" and then show up in runs and sags.

Should the contents of the tank be too cold, and there are no steam pipes behind the tank, the enamel can be warmed by immersing some five gallon cans filled with hot water and then thoroughly stirring the goods after withdrawing the cans.—F. B.

## What Causes Wood Finishing Troubles

You are inviting trouble when:

1—You attempt to finish a wood surface that has not been properly cleaned and sanded in the cabinet room.

2—You use anything in the line of substitute for pure shellac for your wash coat or glaze on a wood surface that has been previously stained with water stain.

3—You apply size before the moisture is all out of your stain; checked veneers and a muddy color are sure to follow.

4—You try to hurry your filler and tow it off before it has set; open pores and pin holes result.

5—You try to coat work before your filler is thoroughly dry.

6—You apply your first coat too heavy; remember two thin coats are better than one heavy coat.

7—You apply your second or third coats before the preceding coat is dry; a poor finish and crazing results.

# The Dependability of **Butanol**

"TO err is human"—but in the natural biological process by which Butanol is made from corn, the human element is eliminated in so far as the character and quality of the resulting product are concerned. No tricky or dangerous substances—no insidious film-destroying impurities — can be present even in the crude mixture from which Butanol is distilled.

This inherent advantage of Butanol is particularly important in the manufacture of lacquer, where mysterious failures, due to unproven solvents, may appear months after the lacquer has been applied.

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Plants: Terre Haute, Ind., and Peoria, Ill.

*"The beacon of the workshop"*

# INDUSTRIAL MILL WHITE

(Flat and Gloss)

**Light-diffusing Durable**
**Washable Economical**

*Samples and Prices on request*

**INDIANAPOLIS PAINT & COLOR CO.**
**INDIANAPOLIS**

# Ask the man who uses lacquer!

PLC

The PLC Trade Mark on the container is a guarantee of a laboratory tested product that today is recognized as giving universal satisfaction. A request will bring a generous sample.

PITTSBURGH LACQUER AND CHEMICAL CO.
Farmers Bank Building, PITTSBURGH, PA.

*The Better Way*
*It Pays*

Strand

## Power Filler Rubbing Machine

Do away with the old strongarm method of rubbing in wood fillers. You can do a better job with less effort with this machine.

Furnished floor type as illustrated or mounted on suspension base with adjustable tie rods. Arranged with cord switch and plug for operating from the lighting circuit.

½ H. P. Motor.

*Manufactured by*

**N. A. STRAND & CO.**
5001 North Lincoln Street
CHICAGO

8—You allow your work to become too dry before applying last coat; your finishing coat will not knit properly with under coats and your danger lies in the fact that in rubbing, the finishing coat will rub off and leave dull patches showing.

9—You allow your work to set under overhead heaters; case-hardening will result, that is to say, the material used—especially if it is varnish—will dry from the top down, instead of from the bottom up.

10—You allow your rubbers to use too much naptha in oil; rubbing it will cause varnish to soften up under friction and cause sweating in work that is not bone dry. I have also seen naptha in oil cause lacquers, especially flat lacquer, to turn white.

11—You allow your men to use their own judgment in mixing stains and other materials; this should be a foreman finisher's responsibility, as troubles from this source frequently arise.

12—Do not allow your department to become dirty and unkempt, as the worst of us like cleanliness. Wash the windows occasionally; keep your lavatories clean and sanitary; clean out your corners, sweep up often where possible and do away with all unused buckets and cans. These things help to prevent disastrous fires as well as reducing insurance rates. It also seems to rejuvenate the men and give them a better working spirit, where there is cleanliness.

All of these above mentioned facts are, I suppose, known to the average foreman finisher. However, I find sometimes my biggest troubles can result from some small fact that I had

*For all work that requires Fast to Light*

ANILINE DYES OR STAINS

*Soluble in*

**Water, Alcohol, Shellac, Spirit Varnish, Acetone, Oil, Benzol, Benzine, Turps, Kerosine, Naphtha, Gasoline, Wax**

*ANY SHADE OR COLOR*

Pylakromes

Our prices save you money.

Send for free samples. Specify solvent to be used.

**PYLAM PRODUCTS COMPANY**

Manufacturing Chemists

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**Pecora** Undercoates and Enamels

**for furniture, toys, velocipedes and all industrial products.....**

Supplied in all colors.

**—for 65 years** we have been making enamels, undercoates and varnishes..... Our enamels have an unblemished reputation for quality and satisfaction. Try them.

PECORA PAINT COMPANY

3rd and Sedgley Streets

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Est. 1862 Inc. 1911

By Smith Bowen

Get acquainted with the products that will give you 100% better finishings.

**French's Crown White Enamel**
**French's Decorative Enamel**
**French's Auto Enamel**
**French's Machinery Enamel**
**French's Engine Enamel**

Let us develop an Enamel to suit your particular needs.

Before making any decision on your finishing problems, by all means send for information on any or all of the above products.

**SAMUEL H. FRENCH & CO.**
Paint, Varnish and Lacquer Manufacturers
Philadelphia
Established 1844 Incorporated 1920

**EASY NOW TO REPAIR DAMAGED FINISHES**

Permanent repairs are easily and quickly made with Campbell's Stick Shellac. No use to lower prices because of damage—or to incur big expense of refinishing.

**CAMPBELL'S STICK SHELLAC**

Campbell's Stick Shellac easily restores scarred and scratched finishes to perfect condition. It is melted into the hole, dent or scratch and then rubbed down and polished. It is truly an ideal way to economically repair damaged finishes.

**UNIVERSALLY USED**

A color card of Campbell's Stick Shellac will be sent free to anyone upon request. Shows actual samples of the Shellac and the range of 54 different colors. Write for one today.

**The M. L. CAMPBELL CO.**
1007 W. 8th St. Kansas City, Mo.

learned years before but had let slip my memory, so it helps to have reminders.—Roy L. Knall.

## Cool Roof Colors

Automobiles of the future will have white roofs along with railroad trains and homes, while each will carry some kind of cooling device for combating the extreme heat of torrid zones or seasons, if elaborate ventilation tests being conducted in the U. S. Bureau of Mines in Pittsburgh mean anything.

Leading engineers in the motor car industry and officials of several of the big railroads are giving their active cooperation in experiments which seek to make transportation of all kinds, as well as home, school and industrial life, more comfortable and healthful by mechanically controlling the air and climatic conditions of Mother Nature.

That colors have definite reactions not only on the psychology of people, but do deflect or absorb the heat of the sun's rays, have been definitely established by these tests, according to F. C. Houghten, director of the air research laboratory of the American Society of Heating and Ventilating Engineers in the Pittsburgh bureau of mines. Houghten and his staff tested the effect of colors on roofs of buildings and automobiles and found that while black absorbs the heat and draws it within, white, more than any other color, deflects the heat. In these tests they were aided by the newly devised heat meter, which is so delicate that it will measure the warmth of a maiden's blush. It was found that red deflects these rays somewhat but is not nearly so effective as white.—M. S. I.

**Pegex**

PYROXYLIN *A Pee Gee Product* LACQUERS

Furniture manufacturers who are interested in Pyroxylin Finishes of the finer type will do well to investigate Pegex. A booklet on this subject has been written—write for it.

PEASLEE-GAULBERT CO
INCORPORATED
Louisville, Kentucky

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**HERE IS A REAL RESPIRATOR**

**FOR PAINT SPRAYING AND FINE DUST**

*Easy Breathing Better Protection Safety*

**Improved Pulmosan Aluminum Dustpruf Respirator**

Made especially to meet all spraying conditions. More protection. Comfortable. More service. Tested dustpruf filter that honestly protects. Sanitary. Can be cleaned after using. Other Pulmosan paint spray Respirators include sponge chemical cartridge and attachment for air line hook up.

*Order from your dealer or direct*

**PULMOSAN SAFETY EQUIPMENT CORP.**

*Manufacturers of SAFETY APPLIANCES, RESPIRATORS, GOGGLES, GAS MASKS, SAND BLAST HELMETS, ETC.*

**380 Jay Street** **Brooklyn, New York**

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INDUSTRY
NOW
DEPENDS
ON
LINDOL

LINDOL TRADE MARK

is recognized by the leading lacquer manufacturers as the superior plasticising medium for all types of lacquers—brushing, spraying and dipping.

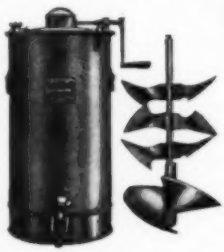
It combines with nitrocellulose and acetylcellulose in varying proportions and with the widest range of gums.

NON-INFLAMMABLE
Non-Volatile Non-hygroscopic
Colorless Odorless

THE LINDOL TRADE MARK DIVISION
The CELLULOID COMPANY
290 Ferry Street Newark, N. J.

*Samples with literature, as well as specifications and prices, will be furnished on request*

# A Mixing Tank for Every Finishing Dep't



No evaporation — no loss of operator's time mixing spray cup at a time—no guess-work about materials being thoroughly mixed.

Because they effect a saving by the proper conditioning of materials before application. Time is an important factor and the mixing of materials is one operation where it may be saved. The installation of mixing tanks is a progressive move which many concerns have already recognized. Will you, without obligation on your part, accept the facts for consideration?

*Get our catalog today*

R. L. VILAS
278 Whalley Ave. New Haven, Conn.

SAVE BY SAVING

for toy finishers
for automobile builders
for machinery painters

(for all finishers)

for furniture manufacturers
for stove manufacturers
for automobile refinishers

Most of the fire losses last year resulted from carelessness with matches and cigarettes, according to the records of the National Fire Protection Association. With this carelessness goes failure to protect inflammable structures. With proper construction, sprinkler systems, fire alarms, fire stop walls and other precautions, fires can be checked before they cause material damage.

### *Consolidation of Firms Under "Arco" Name*

To make possible economies in marketing their product, six of Cleveland's well known manufacturers of paint, varnish and lacquers have consolidated their entire holdings and interests, according to announcement made by S. D. Wise, formerly president of the Arco Company and now head of the new organization.

In the consolidation are the Arco Co., Argus Mfg. Co., Crescent Paint & Mfg. Co., Eclipse Paint & Mfg. Co., Iroquois Mfg. Co. and Sterling Products Co., all of Cleveland. These, with Arco Co., Ltd., Toronto, and Sterling Service Co., Pittsburgh, complete the merger. The new company, which will be known as the Arco Company, is chartered under the laws of Ohio, and has issued 100,000 shares of no-par value stock. A capital investment of about $2,500,000 is said to be represented.

According to President Wise, "all the combining companies will retain their manufacturing identities, and will continue production as in the past, but as subsidiaries of, and under the name of, the Arco Company. This concern will supply a complete line of paints, varnishes, lacquers, enamels and allied products to meet every finishing requirement, and the combined activities of the companies will extend to practically every corner of the world."

The consolidated company will have branch distributing plants in Cleveland, Toronto, Kansas City, New York, Houston, Minneapolis, Los Angeles and Pittsburgh.

The following officers have been elected to manage the company: S. D. Wise, president; S. D. Weil, 1st vice-president; David Andrew, 2nd vice-president; F. T. Jamieson, 3rd vice-president; W. C. Treuhaft, 4th vice-president; E. L. Rich, treasurer; and H. E. Wise, secretary.

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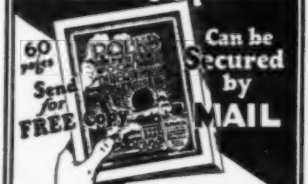


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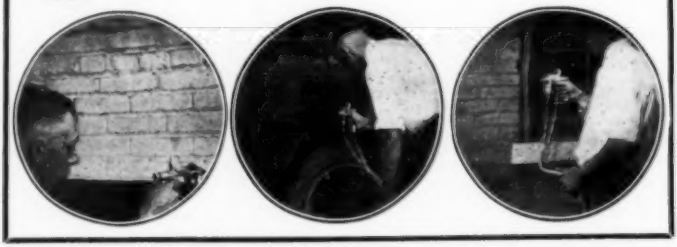

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